# Project Report

# On

# NattuKaka

# Inventory Management System

Submitted in partial fulfillment for the award of

## Diploma in Advance Computing (PG-DAC) from

## C-DAC, ACTS (Pune)

## Guided by:

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| | |
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**Centre for Development of Advanced Computing (C-DAC), Pune**

# ACKNOWLEDGEMENT

This project “**NATTUKAKA – INVENTORY MANAGEMENT SYSTEM**” was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC ACTS).
We are very glad to mention the name of *Mrs.Kishori Khadilkar* for her valuable guidance to work on this project. Her guidance and support helped us to overcome various challenges and obstacles during the course of project work.

We are highly grateful to Ms. Risha P.R. (Manager, ACTS training Centre), C-DAC, for her guidance and support whenever necessary while doing this course Diploma in *Advanced Computing (PG-DAC)* through C-DAC ACTS, Pune.

Our heartfelt thanks goes to *Ms. Shilpi Shalini* (Course Coordinator, PG-*DAC*) who gave all the required support and kind coordination as well as provided all the necessities for our project and throughout the course in C-DAC ACTS, Pune.

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## 1. Introduction of Project:

We have created “NattuKaka” web app which is an online inventory management system enabling customers to keep track of all the products that your business has in stock. Company can update, insert , delete as well as view & track their Inventory. The admin has full access to the resources available, and he can also add role based members with limited access to the resources..

User Interface developed in **React** which uses company owner and employee’s username to authenticate and data is imported using REST API. Axios API makes secure calls to Spring Boot. In the backend, JAVA is used to fetch and manipulate the data and uses MySQL as database.

The cost of bad inventory management can be very high whereas doing it right can do wonders for your company’s success. Too much stock leads to using up a lot of cash and precious stock room space. Not enough stock, on the other hand, means late delivery, dissatisfied customers, and bad reviews about your service**.The companies can access there inventory and manipulate as per business requirement.**

For the login of company into this website we use the user’s username authentication, which allows users to sign up with their credentials. This platform is based on REST services and it tends to independency of all services. This platform is rapid and frequent due to this technique.

## 2. Product Overview and Summary

### 2.1 Purpose:

### 2.1 Existing System:

Current system is a manual one in which users are maintaining ledgers, books etc to store the information like suppliers details, inwards, deliveries and returns of items in all godowns, customer details as well as employee details. It is very difficult to maintain historical data. Also regular investments need to purchase stationary every year.

**Disadvantages:**

The following are the disadvantages of current system

1. It is difficult to maintain important information in books
2. More manual hours need to generate required reports
3. It is tedious to manage historical data which needs much space to keep all the previous years ledgers, book etc
4. Daily transactions are to be entering into different books immediately to avoid conflicts which are very difficult.
5. Hard To retrieve data .

### 2.2 Proposed System:

Proposed system is a software application which avoids more manual hours that need to spend in record keeping and generating reports. This application keeps the data in a centralized way which is available to all the users simultaneously. It is very easy to manage historical data in database. No specific training is required for the employees to use this application. They can easily use the tool that decreases manual hours spending for normal things and hence increases the performance. As the data is centralized it is very easy to maintain the stocks of the various items in all godowns.

**Advantages**:

The following are the advantages of proposed system

1. Easy to manage all the daily transactions
2. Can generate required reports easily
3. Easy to manage historical data in a secure manner
4. Centralized database helps in avoiding conflicts
5. Easy to use GUI that does not requires specific training.
6. Accessible from anywhere

### 2.3 Overview:

Section 3.0, the Overall Description, provides an overview of the components and the relationship between them. Section 4.0 provides the Specific Requirements of the product. In the subsection (4.1) and (4.2) of which the various functional requirements and various interface respectively are discussed.

### 2.4 Feasibility Study

Feasibility is determination of the requirements of the project and if it would be feasible to develop it as well as how many functionalities can be incorporated in the project. Before actually recommending the new system it is important to investigate if it is feasible to develop the new system.

Before developing and implementing a system we have sure that our system is feasible in the following ways:

1. **Technical Feasibility**
2. **Operational Feasibility**

- **Technical Feasibility:**

In the type of feasibility study, we checked whether it is possible or not to develop the requested system with availability of manpower, software, hardware, etc. The system which can function well on Linux as wellas Windows platforms and hence is suitable for all end- users. The system is technically feasible because it does not require too many resources and runs with the browser. A proof of concept was implemented to verify the technical feasibility to retrieve data from various APIs.

- **Operational Feasibility:**

In this type of feasibility study the operation implementation of the system is considered. Checking is done regarding whether it is feasible for the users to use the application. Thus the proposed system is said to be operationally feasible only of the end users are able to understand the system clearly and correctly and can usethe system with ease and with the minimum training.

## 3. Overall Description:

### 3.1 Product Features

The project's aim is to provide an online courier delivery website for customers which is containing java (platform independent), React, API's for user

### 3.1 Technology Used

**BACK END**

- Spring Boot
- Spring Security with JWT
- Spring Data JPA
- MYSQL

**FRONT END**

- React JS , Redux
- HTML, Tailwind CSS
- Axios Libraries

**DEVOPS**

- Git
- Jenkins
- Docker
- AWS (EC2)

**J2EE Spring Boot**

Spring Boot has been built for Rapid Application Development. The goal of Spring Boot is to provide a way to create Java applications quickly and simply, through an embedded server. By default, it used an embedded version of Tomcat and hence eliminating the need of Java EE containers.

It is a framework to ease the bootstrapping and development of new Spring Applications. Bootstrapping with defaults included in the configuration/ jar-dependencies. Easy to create standalone applications with embedded Tomcat/Jetty/Undertow. It provides defaults for code and annotation configuration to quick start new spring projects within no time. Plenty of Spring Boot Starter to quickly get up and running.

No code generation and no requirement for XML configuration. It reduces lots of development time and increases productivity.

### Spring Security with JWT

Spring Security is a framework which provides various security features like: authentication, authorization to create secure Java Enterprise Applications It overcomes all the problems that come during creating non spring security applications and manage new server environment for the application.

This framework targets two major areas of application are authentication and authorization. Authentication is the process of knowing and identifying the user that wants to access. Authorization is the process to allow authority to perform actions in the application.

JSON Web Token or JWT, as it is more commonly called, is an open Internet standard (RFC 7519) for securely transmitting trusted information between parties in a compact way. JWT's can also be used for the exchange of information though they more commonly used for authorization as they offer a lot of advantages over session management using in-memory random tokens. The biggest of them being the enabling the delegation of authentication logic to a third-party server like AuthO etc.

### Spring Data JPA

Spring Data JPA, part of the larger Spring Data family, makes it easy to easily implement JPA based repositories. This module deals with enhanced support for JPA based data access layers. It makes it easier to build Spring-powered applications that use data access technologies.

Implementing a data access layer of an application has been cumbersome for quite a while. Too much boilerplate code has to be written to execute simple queries as well as perform pagination, and auditing. Spring Data JPA aims to significantly improve the implementation of data access layers by reducing the effort to the amount that's actually needed. As a developer you write your repository interfaces, including custom finder methods, and Spring will provide the implementation automatically.

### MySQL

MySQL is an open-source relational database management system (RDBMS).A list of commonly used MySQL queries to create database, use database, create table, insert record, update record, delete record, select record, truncate table and drop table etc. MySQL is a relational database management system based on SQL – Structured Query Language. The application is used for a wide range of purposes, including data warehousing, e-commerce, and logging applications.

The most common use for MySQL, however, is for the purpose of a web database. It can be used to store anything from a single record of information to an entire inventory of available products for an online store. In association with a scripting language such as PHP or Perl (both offered on our hosting accounts) it is possible to create websites which will interact in real- time with a MySQL database to rapidly display categorized and searchable information to a website user.

**React**

React is a JavaScript library for building user interfaces. It has transformed the way we think about front-end development. React.js has clasped the engagement of the open-source community. And its demand is irreversible in the coming future. It is here to stay.

Improved performance: React uses Virtual DOM, thereby creating web applications faster. Virtual DOM compares the component's previous states and updates only the items in the Real DOM that were changed, instead of updating all of the components again, as conventional web applications do.

**Redux**

Redux is an open-source JavaScript library for managing and centralizing application state. It is most commonly used with libraries such as React or Angular for building user interfaces.

React Redux is the official React binding for Redux. It allows React components to read data from a Redux Store, and dispatch Actions to the Store to update data. Redux helps apps to scale by providing a sensible way to manage state through a unidirectional data flow model. React Redux is conceptually simple. It subscribes to the Redux store, checks to see if the data which your component wants have changed, and re-renders your component.

**Tailwind CSS**

Tailwind CSS is basically a utility-first CSS framework for rapidly building custom user interfaces. It is a highly customizable, low-level CSS framework that gives you all of the building blocks you need to build bespoke designs without any annoying opinionated styles you have to fight to override.

**Axios**

In ReactJS, Axios is a library that serves to create HTTP requests that are present externally. It is evident from the fact that we may sometimes in React applications need to get data from the external source. It is quite difficult to fetch such data so that they can be normally shown on the website. Thus, it helps in retrieving the data thereby adding it to the state to facilitate the application whenever the requirement arises

Axios is promise-based, which gives you the ability to take advantage of JavaScript's async and await for more readable asynchronous code.It lets you make use of asynchronous readable code present in Javascript. It can be easily used to cancel or intercept requests with the help of the in-built feature of client-side protection of forgery across the cross-site request

**Git**

Git is an open-source distributed version control system. It is designed to handle minor to major projects with high speed and efficiency. It is developed to co-ordinate the work among the developers. The version control allows us to track and work together with our team members at the same workspace

Git is easy to learn and has a tiny footprint with lightning fast performance. It outclasses SCM tools like Subversion, CVS, Perforce, and Clear Case with features like cheap local branching, convenient staging areas, and multiple workflows.

### Jenkins

Jenkins is an open source automation tool written in Java programming language that allows continuous integration. Jenkins builds and tests our software projects which continuously making it easier for developers to integrate changes to the project, and making it easier for users to obtain a fresh build.

It also allows us to continuously deliver our software by integrating with a large number of testing and deployment technologies. Jenkins offers a straightforward way to set up a continuous integration or continuous delivery environment for almost any combination of languages and source code repositories using pipelines, as well as automating other routine development tasks.

### AWS (EC2)

Amazon EC2 is a web service that provides resizable compute capacity in the cloud. AWS EC2 stands for Amazon Elastic Compute Cloud. It reduces the time required to obtain and boot new user instances to minutes rather than in older days, if you need a server then you had to put a purchase order, and cabling is done to get a new server which is a very time-consuming process. You can scale the compute capacity up and down as per the computing requirement changes.

### Docker

Docker is an open-source centralized platform designed to create, deploy, and run applications. Docker uses container on the host's operating system to run applications. It allows applications to use the same Linux kernel as a system on the host computer, rather than creating a whole virtual operating system. Containers ensure that our application works in any environment like development, test, or production.

### Docker And its Advantages

- Portability

  Once we have tested our containerized application we can deploy it to any other system where Docker is running and we can be sure that our application will perform exactly as it did when we tested it.

- Performance

  Although virtual machines are an alternative to containers, the fact that containers do not contain an operating system (whereas virtual machines do) means that containers have much smaller footprints than virtual machines, are faster to create, and quicker to start.

- Agility

  The portability and performance benefits offered by containers can help us make our development process more agile and responsive. We can enhance our continuous integration and continuous delivery processes .

- Isolation

  A Docker container that contains one of our applications also includes the relevant versions of any supporting software that our application requires. If other Docker containers contain applications that require different versions of the same supporting software, that isn't a problem because the different Docker containers are totally independent of one other.

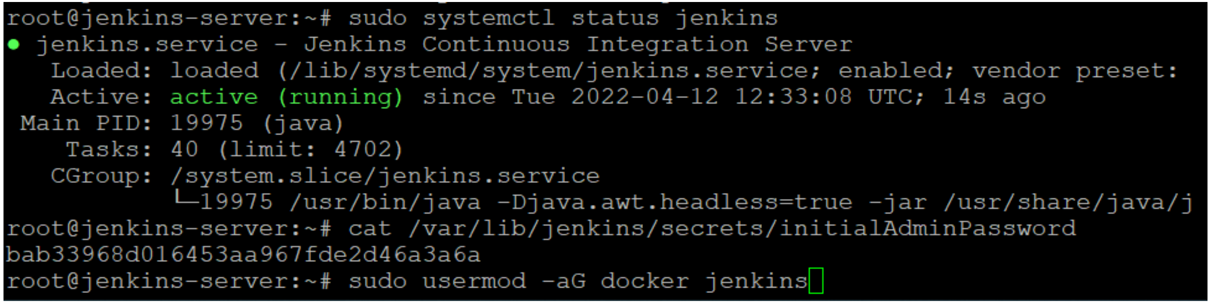
- Scalability

  We can quickly create new containers if demand for our applications requires them. When using multiple containers we can take advantage of a range of container management options.

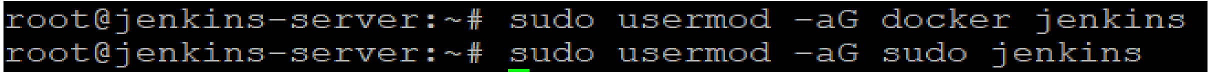
## Docker containers and Jenkins CI/CD Pipelining-

### Following Steps were followed to make CI/CD pipelining through Jenkins and Docker

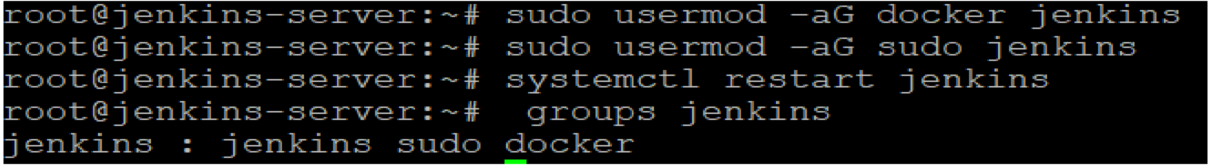
1. Installing Docker and Jenkins on the cloud server.
2. The following commands were run in order to set up the machine ready with Jenkins and docker which can build React App and Maven Project.



```
root@jenkins-server:~# sudo systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset:
   Active: active (running) since Tue 2022-04-12 12:33:08 UTC; 14s ago
 Main PID: 19975 (java)
    Tasks: 40 (limit: 4702)
   CGroup: /system.slice/jenkins.service
           └─19975 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/j
root@jenkins-server:~# cat /var/lib/jenkins/secrets/initialAdminPassword
bab33968d016453aa967fde2d46a3a6a
root@jenkins-server:~# sudo usermod -aG docker jenkins
```

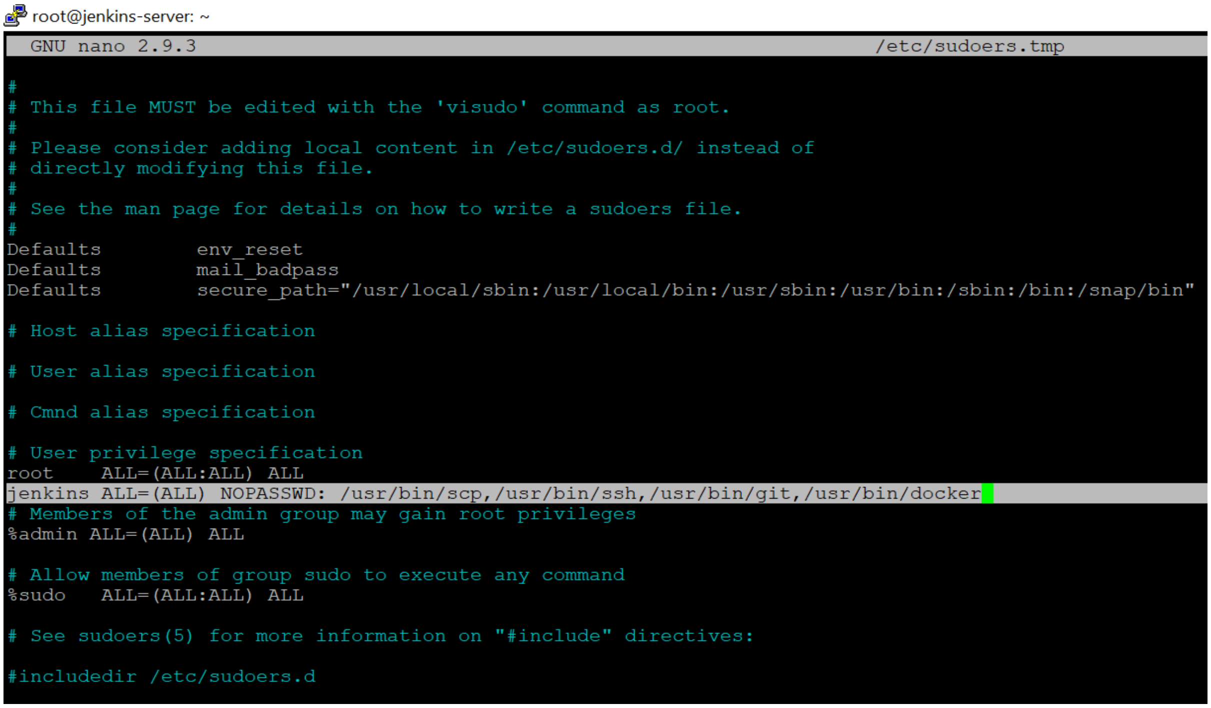


```
root@jenkins-server:~# sudo usermod -aG docker jenkins
root@jenkins-server:~# sudo usermod -aG sudo jenkins
```



```
root@jenkins-server:~# sudo usermod -aG docker jenkins
root@jenkins-server:~# sudo usermod -aG sudo jenkins
root@jenkins-server:~# systemctl restart jenkins
root@jenkins-server:~#  groups jenkins
jenkins : jenkins sudo docker
```

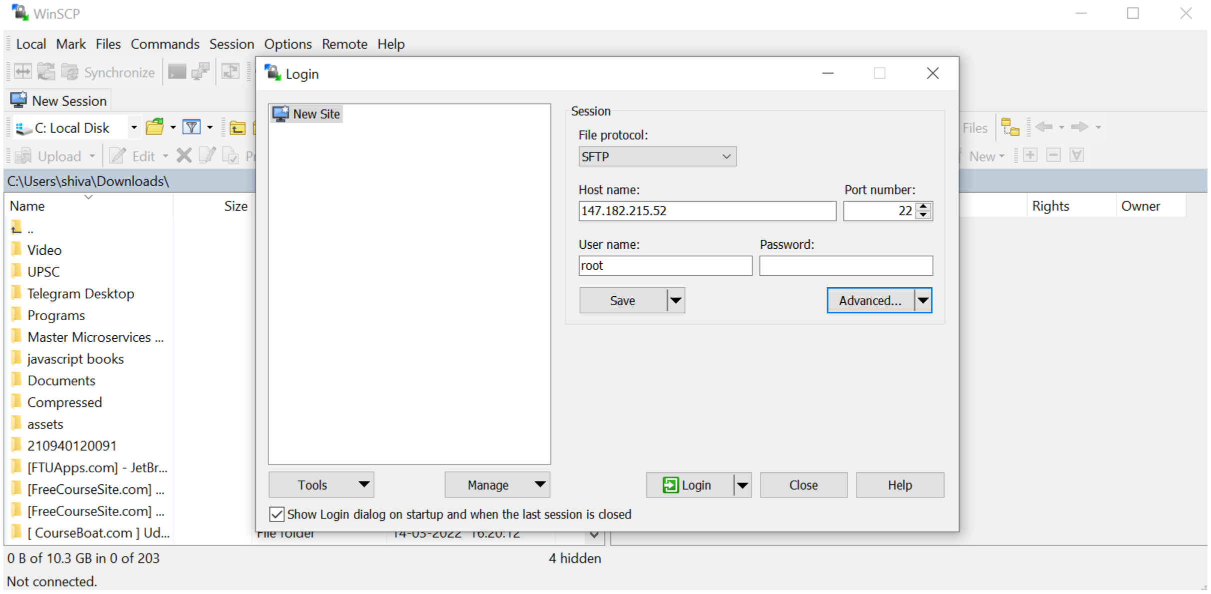
3. Then we need to run the command -> sudo visudo and give Jenkins the following permissions:



root@jenkins-server: ~

```
  GNU nano 2.9.3                                              /etc/sudoers.tmp

#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults        env_reset
Defaults        mail_badpass
Defaults        secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/snap/bin"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL
jenkins ALL=(ALL) NOPASSWD: /usr/bin/scp,/usr/bin/ssh,/usr/bin/git,/usr/bin/docker
# Members of the admin group may gain root privileges
%admin ALL=(ALL) ALL

# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL

# See sudoers(5) for more information on "#include" directives:

#includedir /etc/sudoers.d
```

4. Since the backend and frontend servers are running on other aws EC2 instances and we want this Jenkins server to communicate with them via ssh so we need to provide this server with the key files of both servers.



C:\Users\shiva\Downloads\

| Name | Size |
|---|---|
| .. | |
| Video | |
| UPSC | |
| Telegram Desktop | |
| Programs | |
| Master Microservices ... | |
| javascript books | |
| Documents | |
| Compressed | |
| assets | |
| 210940120091 | |
| [FTUApps.com] - JetBr... | |
| [FreeCourseSite.com] ... | |
| [FreeCourseSite.com] ... | |
| [ CourseBoat.com ] Ud... | |

Session

File protocol: SFTP

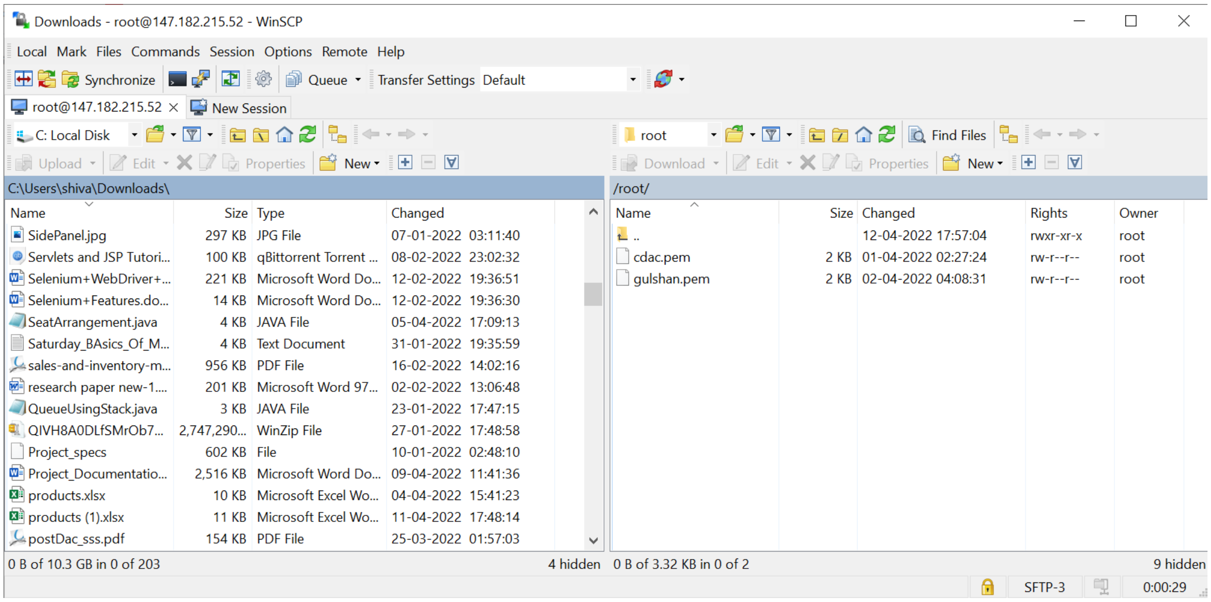
Host name: 147.182.215.52 Port number: 22

User name: root Password:

☑ Show Login dialog on startup and when the last session is closed

0 B of 10.3 GB in 0 of 203 4 hidden

Not connected.



C:\Users\shiva\Downloads\

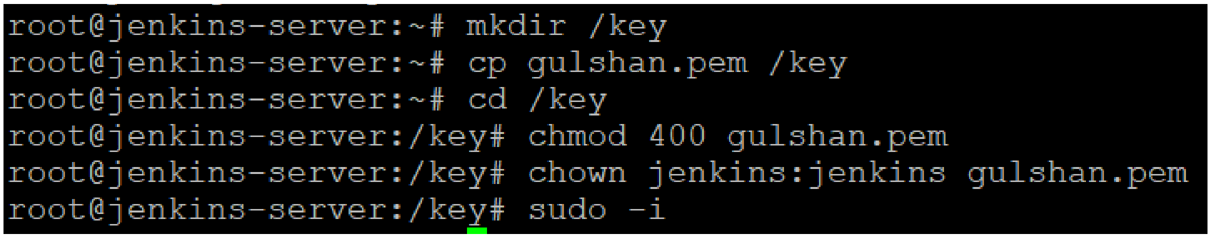
| Name | Size | Type | Changed |
|---|---|---|---|
| SidePanel.jpg | 297 KB | JPG File | 07-01-2022 03:11:40 |
| Servlets and JSP Tutori... | 100 KB | qBittorrent Torrent ... | 08-02-2022 23:02:32 |
| Selenium+WebDriver+... | 221 KB | Microsoft Word Do... | 12-02-2022 19:36:51 |
| Selenium+Features.do... | 14 KB | Microsoft Word Do... | 12-02-2022 19:36:30 |
| SeatArrangement.java | 4 KB | JAVA File | 05-04-2022 17:09:13 |
| Saturday_BAsics_Of_M... | 4 KB | Text Document | 31-01-2022 19:35:59 |
| sales-and-inventory-m... | 956 KB | PDF File | 16-02-2022 14:02:16 |
| research paper new-1.... | 201 KB | Microsoft Word 97... | 02-02-2022 13:06:48 |
| QueueUsingStack.java | 3 KB | JAVA File | 23-01-2022 17:47:15 |
| QIVH8A0DLfSMrOb7... | 2,747,290... | WinZip File | 27-01-2022 17:48:58 |
| Project_specs | 602 KB | File | 10-01-2022 02:48:10 |
| Project_Documentatio... | 2,516 KB | Microsoft Word Do... | 09-04-2022 11:41:36 |
| products.xlsx | 10 KB | Microsoft Excel Wo... | 04-04-2022 15:41:23 |
| products (1).xlsx | 11 KB | Microsoft Excel Wo... | 11-04-2022 17:48:14 |
| postDac_sss.pdf | 154 KB | PDF File | 25-03-2022 01:57:03 |

/root/

| Name | Size | Changed | Rights | Owner |
|---|---|---|---|---|
| .. | | 12-04-2022 17:57:04 | rwxr-xr-x | root |
| cdac.pem | 2 KB | 01-04-2022 02:27:24 | rw-r--r-- | root |
| gulshan.pem | 2 KB | 02-04-2022 04:08:31 | rw-r--r-- | root |

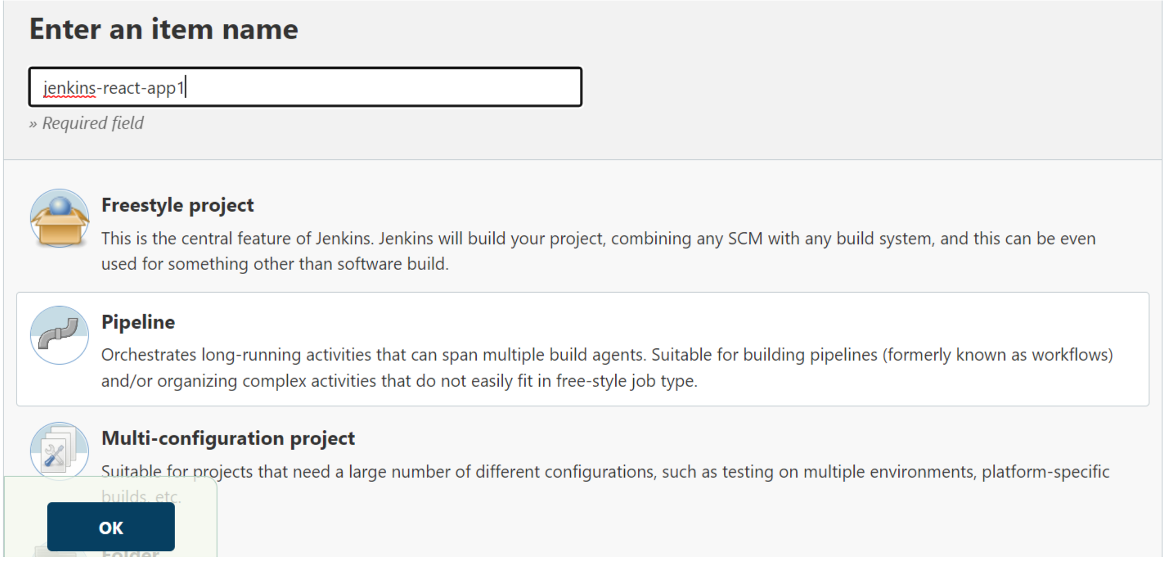
0 B of 10.3 GB in 0 of 203 4 hidden 0 B of 3.32 KB in 0 of 2 9 hidden

SFTP-3 0:00:29



```
root@jenkins-server:~# mkdir /key
root@jenkins-server:~# cp gulshan.pem /key
root@jenkins-server:~# cd /key
root@jenkins-server:/key# chmod 400 gulshan.pem
root@jenkins-server:/key# chown jenkins:jenkins gulshan.pem
root@jenkins-server:/key# sudo -i
```

5. Now that all the settings are done, we need to create a CI/CD pipelining on Jenkins. It is done as shown in screenshots.



**Enter an item name**

jenkins-react-app1

» *Required field*

**Freestyle project**

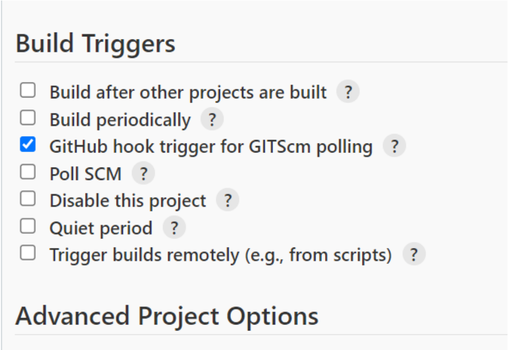
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

**Pipeline**

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**

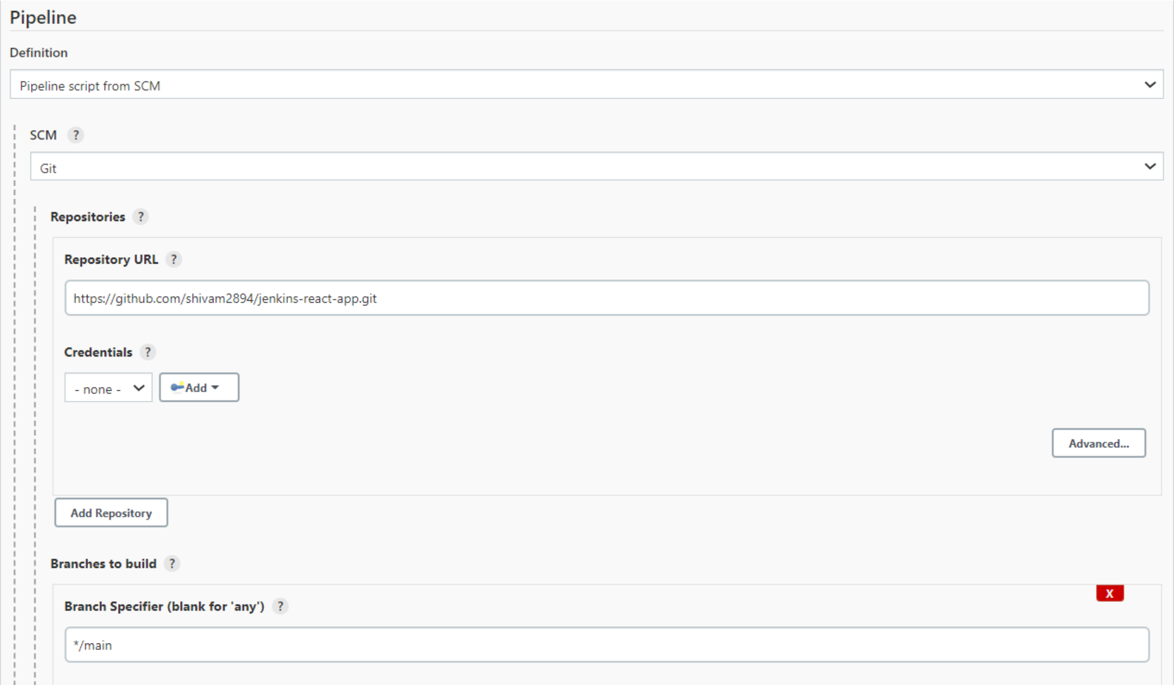
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.



Build Triggers

- □ Build after other projects are built ?
- □ Build periodically ?
- ☑ GitHub hook trigger for GITScm polling ?
- □ Poll SCM ?
- □ Disable this project ?
- □ Quiet period ?
- □ Trigger builds remotely (e.g., from scripts) ?

Advanced Project Options



Pipeline

Definition: Pipeline script from SCM

SCM ?: Git

**Repositories** ?

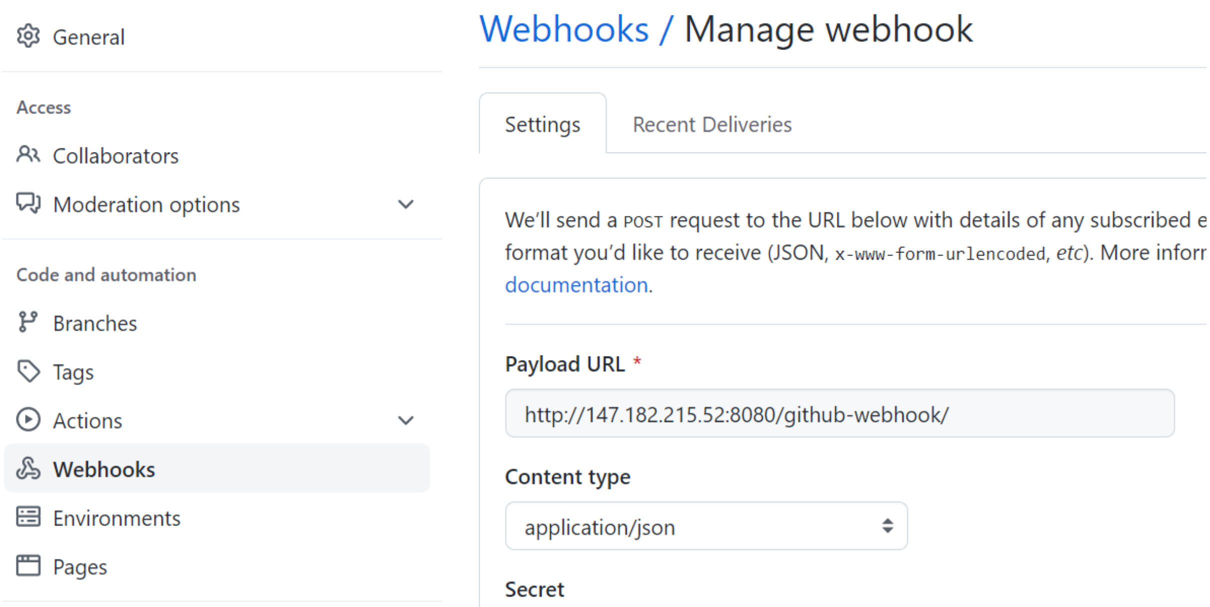
**Repository URL** ?: https://github.com/shivam2894/jenkins-react-app.git

**Credentials** ?: - none -

**Branches to build** ?

**Branch Specifier (blank for 'any')** ?: */main

6. Then on github we need to create a Webhook with url of Jenkins server.



We'll send a POST request to the URL below with details of any subscribed e format you'd like to receive (JSON, `x-www-form-urlencoded`, *etc*). More inforr documentation.

Payload URL *

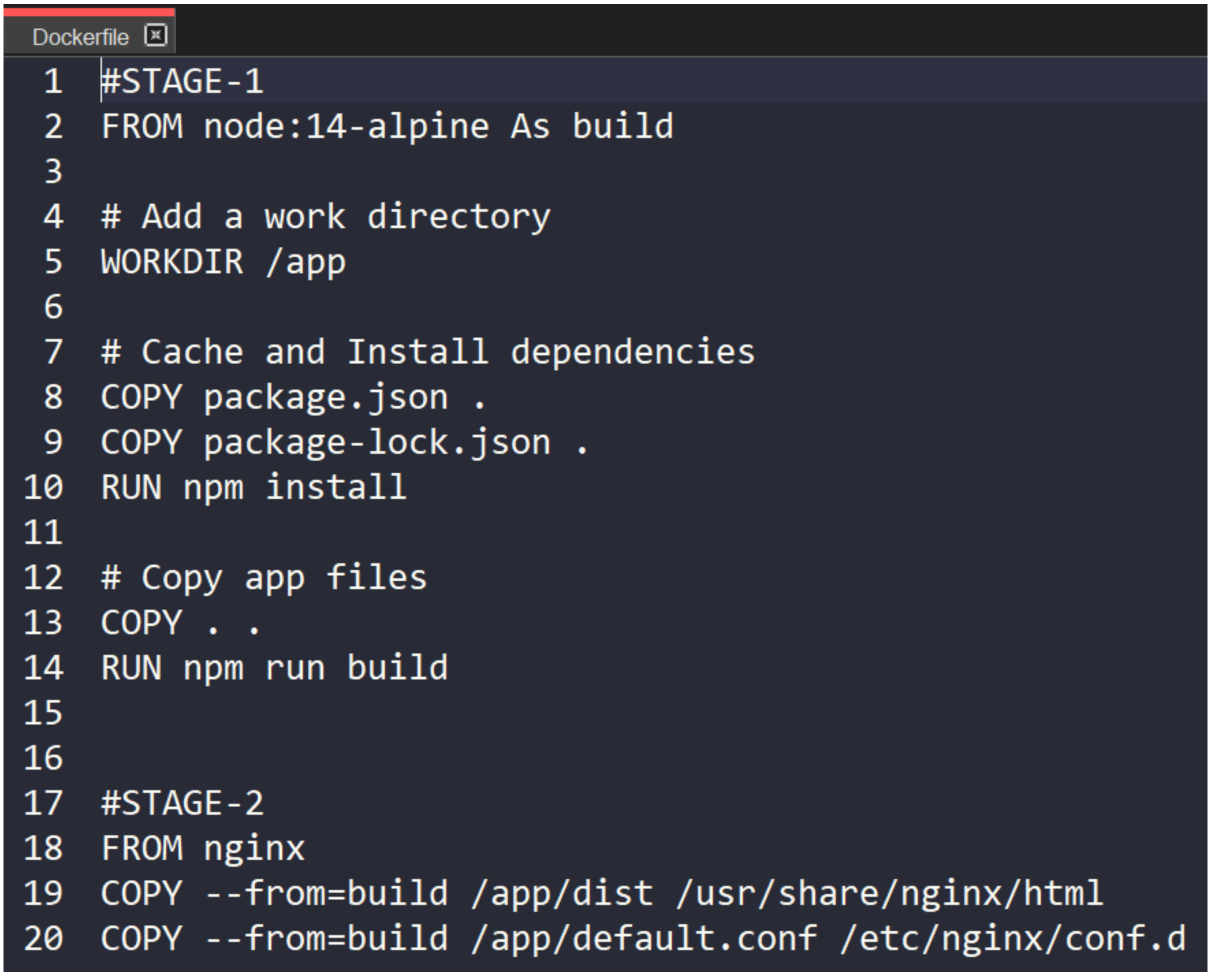
http://147.182.215.52:8080/github-webhook/

Content type

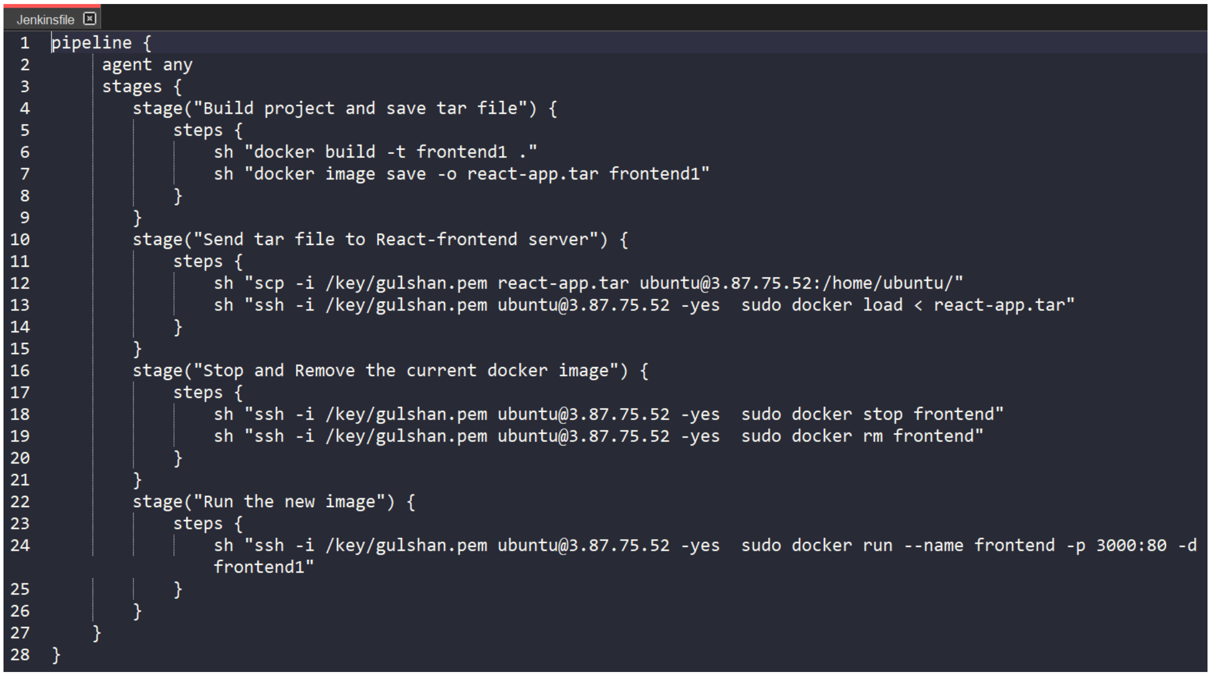
application/json

Secret

7. Following are the contents of Dockerfile and Jenkinsfile that we are using:



```
#STAGE-1
FROM node:14-alpine As build

# Add a work directory
WORKDIR /app

# Cache and Install dependencies
COPY package.json .
COPY package-lock.json .
RUN npm install

# Copy app files
COPY . .
RUN npm run build


#STAGE-2
FROM nginx
COPY --from=build /app/dist /usr/share/nginx/html
COPY --from=build /app/default.conf /etc/nginx/conf.d
```

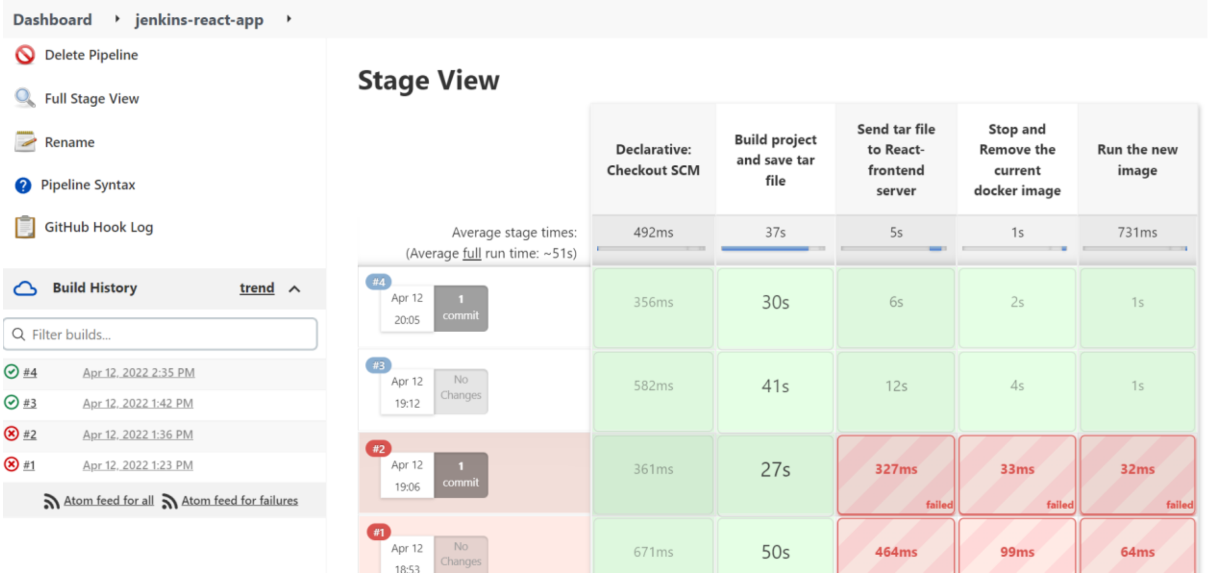


Jenkinsfile

```
pipeline {
    agent any
    stages {
        stage("Build project and save tar file") {
            steps {
                sh "docker build -t frontend1 ."
                sh "docker image save -o react-app.tar frontend1"
            }
        }
        stage("Send tar file to React-frontend server") {
            steps {
                sh "scp -i /key/gulshan.pem react-app.tar ubuntu@3.87.75.52:/home/ubuntu/"
                sh "ssh -i /key/gulshan.pem ubuntu@3.87.75.52 -yes  sudo docker load < react-app.tar"
            }
        }
        stage("Stop and Remove the current docker image") {
            steps {
                sh "ssh -i /key/gulshan.pem ubuntu@3.87.75.52 -yes  sudo docker stop frontend"
                sh "ssh -i /key/gulshan.pem ubuntu@3.87.75.52 -yes  sudo docker rm frontend"
            }
        }
        stage("Run the new image") {
            steps {
                sh "ssh -i /key/gulshan.pem ubuntu@3.87.75.52 -yes  sudo docker run --name frontend -p 3000:80 -d frontend1"
            }
        }
    }
}
```

8. Finally we just need to push the code, and we will see the following results.

For Frontend React App server=>

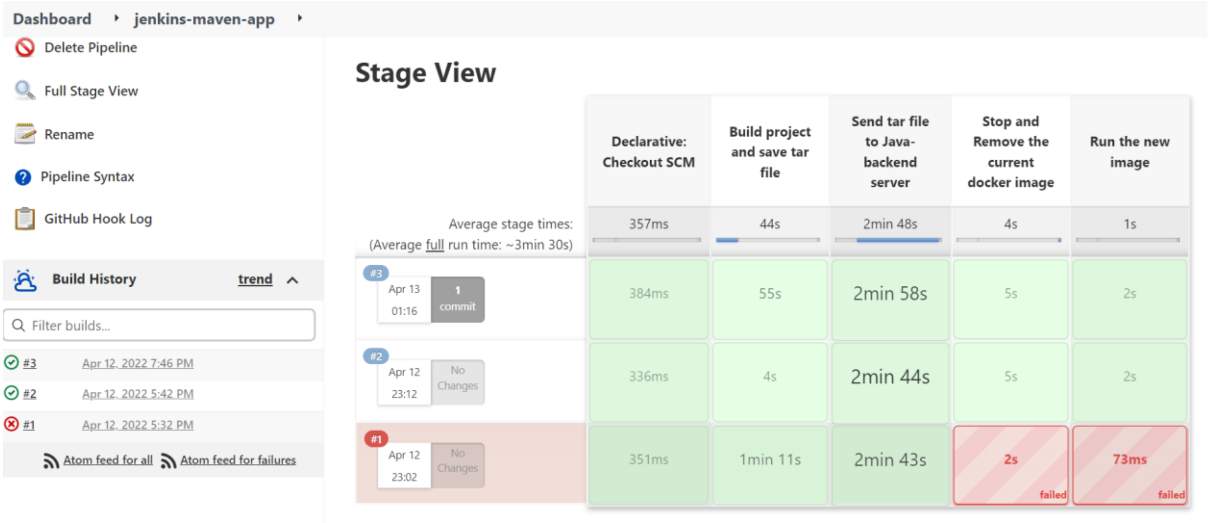


| Build | Date |
|---|---|
| #4 | Apr 12, 2022 2:35 PM |
| #3 | Apr 12, 2022 1:42 PM |
| #2 | Apr 12, 2022 1:36 PM |
| #1 | Apr 12, 2022 1:23 PM |

Stage View

| | Declarative: Checkout SCM | Build project and save tar file | Send tar file to React-frontend server | Stop and Remove the current docker image | Run the new image |
|---|---|---|---|---|---|
| Average stage times:<br>(Average full run time: ~51s) | 492ms | 37s | 5s | 1s | 731ms |
| #4 Apr 12 20:05 1 commit | 356ms | 30s | 6s | 2s | 1s |
| #3 Apr 12 19:12 No Changes | 582ms | 41s | 12s | 4s | 1s |
| #2 Apr 12 19:06 1 commit | 361ms | 27s | 327ms failed | 33ms failed | 32ms failed |
| #1 Apr 12 18:53 No Changes | 671ms | 50s | 464ms | 99ms | 64ms |

**For Java backend server->**



| Build | Date |
|---|---|
| #3 | Apr 12, 2022 7:46 PM |
| #2 | Apr 12, 2022 5:42 PM |
| #1 | Apr 12, 2022 5:32 PM |

Stage View

| | Declarative: Checkout SCM | Build project and save tar file | Send tar file to Java-backend server | Stop and Remove the current docker image | Run the new image |
|---|---|---|---|---|---|
| Average stage times:<br>(Average full run time: ~3min 30s) | 357ms | 44s | 2min 48s | 4s | 1s |
| #3 Apr 13 01:16 1 commit | 384ms | 55s | 2min 58s | 5s | 2s |
| #2 Apr 12 23:12 No Changes | 336ms | 4s | 2min 44s | 5s | 2s |
| #1 Apr 12 23:02 No Changes | 351ms | 1min 11s | 2min 43s | 2s failed | 73ms failed |

Results of Implementing Docker and Jenkins.

- We have separated the burden of building the app and starting it on the same server on which the actual App is running.
- Now the Jenkins server which contains docker too just pulls the code from github and then builds the image according to instructions in Dockerfile, then according to instructions in Jenkinsfile it SSH to frontend/backend aws server , copies the newly generated Docker image for our project to aws server, stops the existing container and then starts the app from the new image.
- As we can see the **downtime of our servers (both frontend and backend) is negligible** since the main time is taken up on building the image which is done by Jenkins on another server.
- Jenkins only stops the old container for a sec and immediately deploys a new one
- This can be seen in the above screenshots, the time for which **it stops and starts is 7seconds which is negligible.**

## 3.2 User Classes

There are two type of users who can access this website. One is Company Owner, second one is Employee.

## 3.3 General Constraints

Users should have an email and have a browser

## 3.4 Project Management Methodology

Scrum Agile Methodology is used.

**Scrum Agile Methodology**

Scrum is a framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value.

Scrum is a lightweight framework that helps people, teams and organizations generate value through adaptive solutions for complex problems. Scrum co-creators Ken Schwaber and Jeff Sutherland have written The Scrum Guide to explain Scrum clearly and succinctly. This Guide contains the definition of Scrum. This definition consists of Scrum's accountabilities, events, artifacts, and the rules that bind them together.

### 3.5 Overall Features

There are 2 major roles in our project:

1. **Company Owner**

- Sign Up
- Sign In to Account
- View all Employee.
- Invite Employee
- Delete Employee Record
- View all Transaction
- Edit transactions
- Create new Transaction
- Search Transaction for specified range of date
- Filter Transaction according to Goods Status
- Reset Filter
- Delete Transaction
- Download Invoice
- View Inventory
- Add Item in Inventory
- Upload Item details
- Search product by Product Id
- Search product by Product Name
- Search product by Product Category
- Filter product by Stock level
- Reset Filter
- Delete Product from Inventory
- Edit Product Details from Inventory
- Add Contact To Contact List
- Edit the Company details from the Contact list
- Delete the Company from the Contact list
- View Reports

**2. Employee**

- Sign In to the Account
- View all Transaction
- Edit transactions
- Create new Transaction
- Search Transaction for specified range of date
- Filter Transaction according to Goods Status
- Reset Filter
- Delete Transaction
- Download Invoice
- View Inventory
- Add Item in Inventory
- Upload Item details
- Search product by Product Id
- Search product by Product Name
- Search product by Product Category
- Filter product by Stock level
- Reset Filter
- Delete Product from Inventory
- Edit Product Details from Inventory

**3. Common Features**

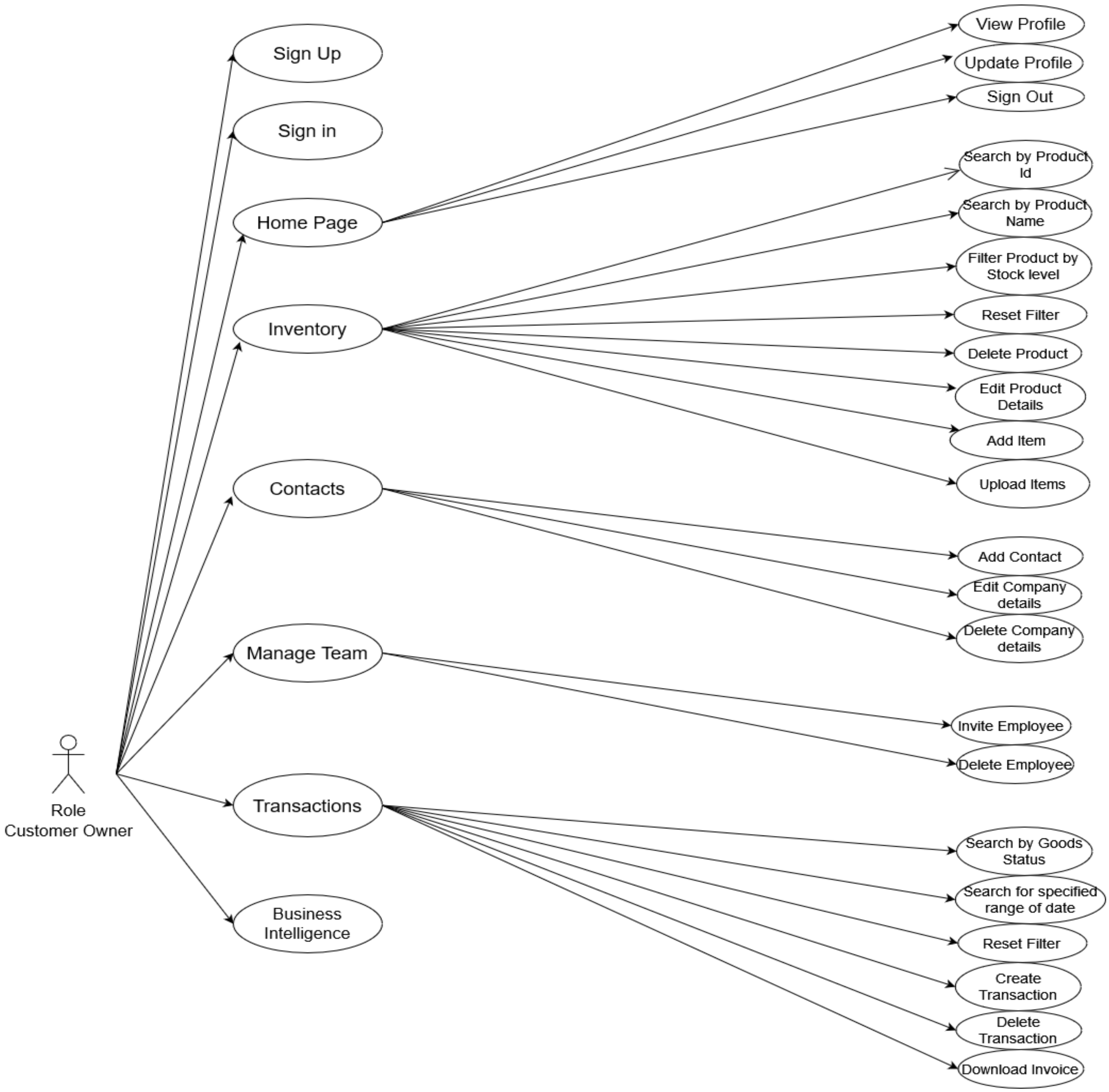
- Forgot Password
- Remember Me

# 4.REQUIREMENTS

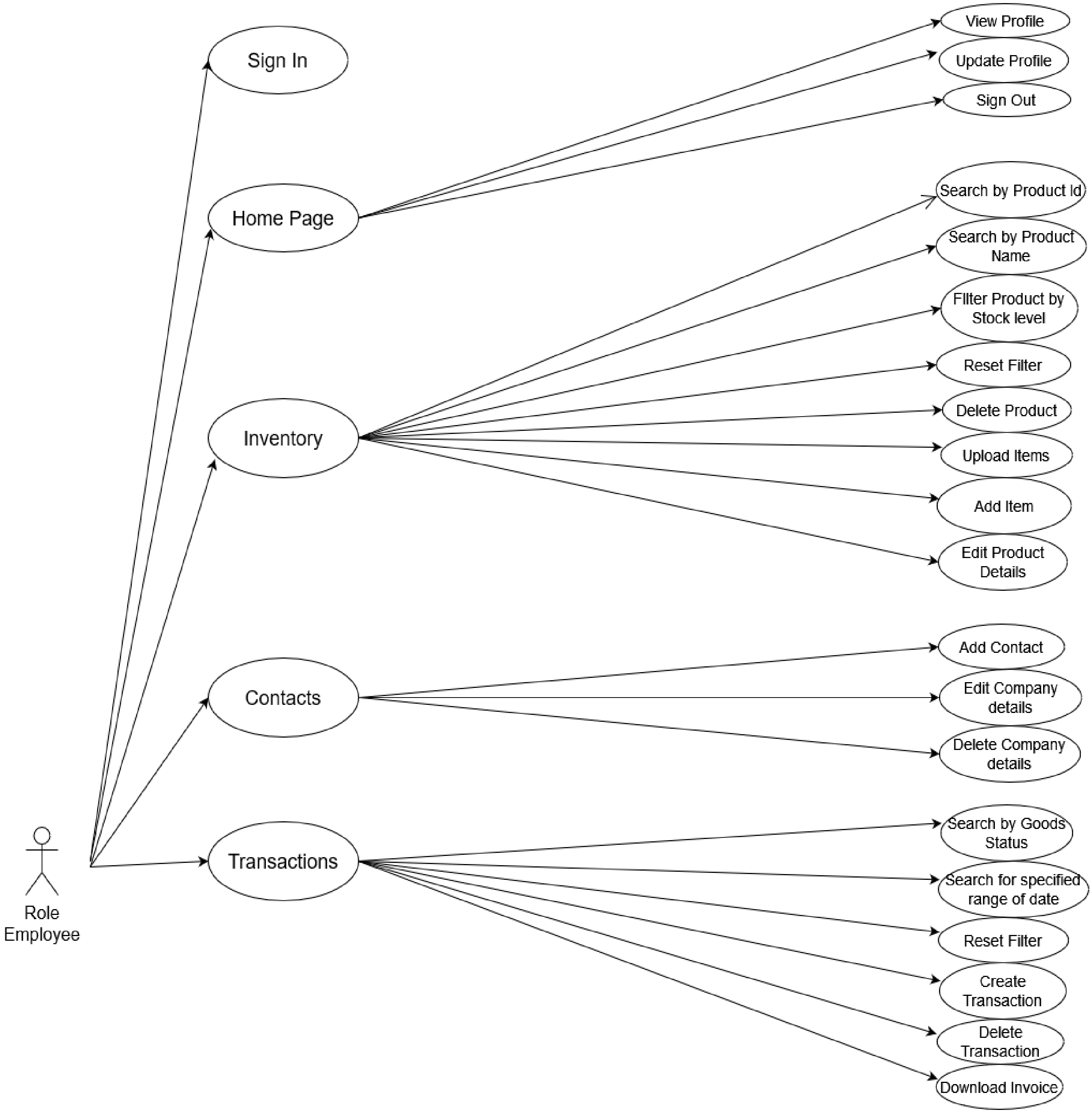
## 4.1 FUNCTIONAL REQUIREMENTS

### 4.1.1 Complete System:

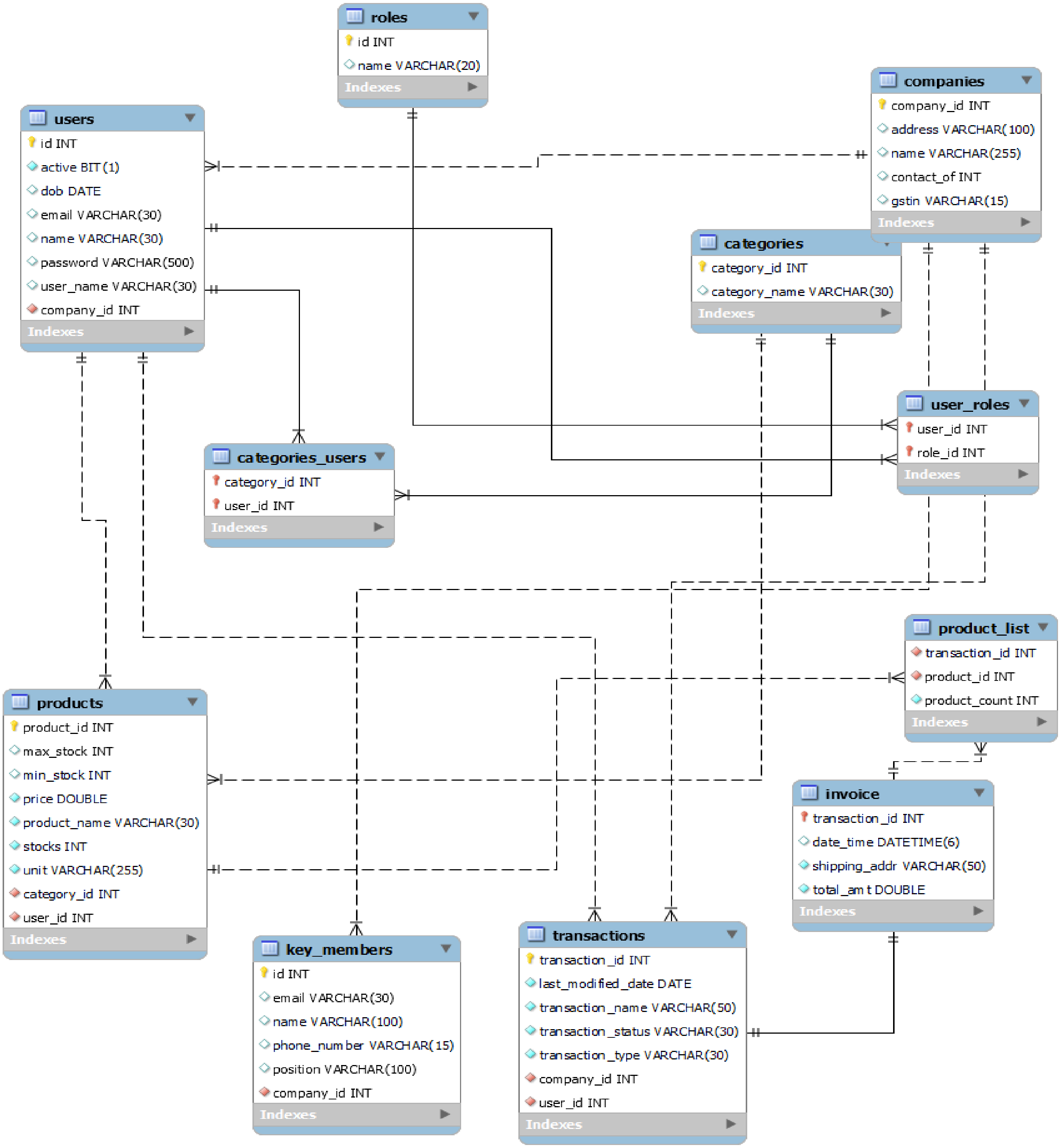
**COMPANY OWNER**



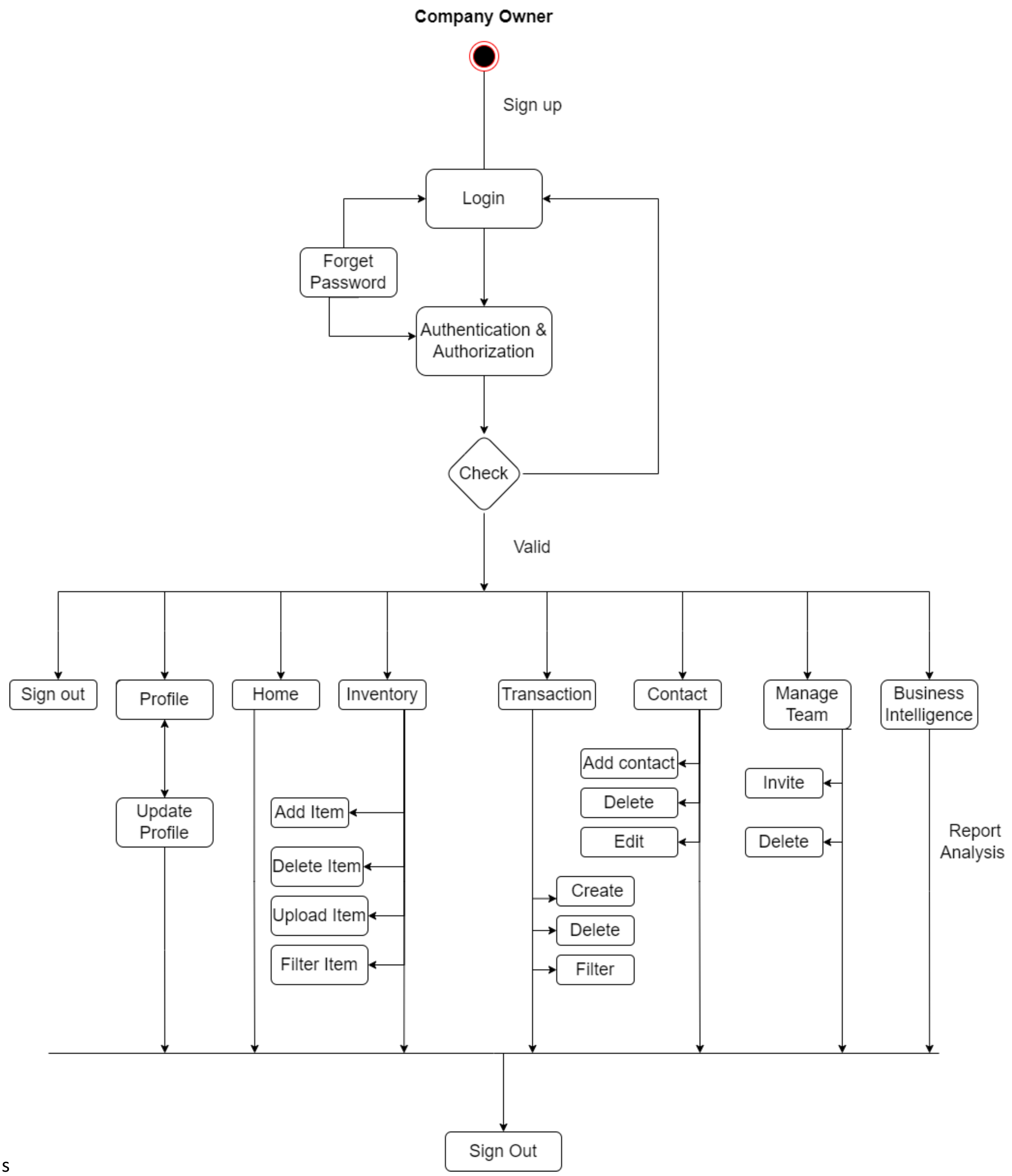
**EMPLOYEE**


Sign In
Home Page
Inventory
Contacts
Transactions
Role
Employee
View Profile
Update Profile
Sign Out
Search by Product Id
Search by Product Name
FIlter Product by Stock level
Reset Filter
Delete Product
Upload Items
Add Item
Edit Product Details
Add Contact
Edit Company details
Delete Company details
Search by Goods Status
Search for specified range of date
Reset Filter
Create Transaction
Delete Transaction
Download Invoice

## 5. E-R Diagram


roles
id INT
name VARCHAR(20)
Indexes
companies
company_id INT
address VARCHAR(100)
name VARCHAR(255)
contact_of INT
gstin VARCHAR(15)
Indexes
users
id INT
active BIT(1)
dob DATE
email VARCHAR(30)
name VARCHAR(30)
password VARCHAR(500)
user_name VARCHAR(30)
company_id INT
Indexes
categories
category_id INT
category_name VARCHAR(30)
Indexes
user_roles
user_id INT
role_id INT
Indexes
categories_users
category_id INT
user_id INT
Indexes
product_list
transaction_id INT
product_id INT
product_count INT
Indexes
products
product_id INT
max_stock INT
min_stock INT
price DOUBLE
product_name VARCHAR(30)
stocks INT
unit VARCHAR(255)
category_id INT
user_id INT
Indexes
invoice
transaction_id INT
date_time DATETIME(6)
shipping_addr VARCHAR(50)
total_amt DOUBLE
Indexes
key_members
id INT
email VARCHAR(30)
name VARCHAR(100)
phone_number VARCHAR(15)
position VARCHAR(100)
company_id INT
Indexes
transactions
transaction_id INT
last_modified_date DATE
transaction_name VARCHAR(50)
transaction_status VARCHAR(30)
transaction_type VARCHAR(30)
company_id INT
user_id INT
Indexes

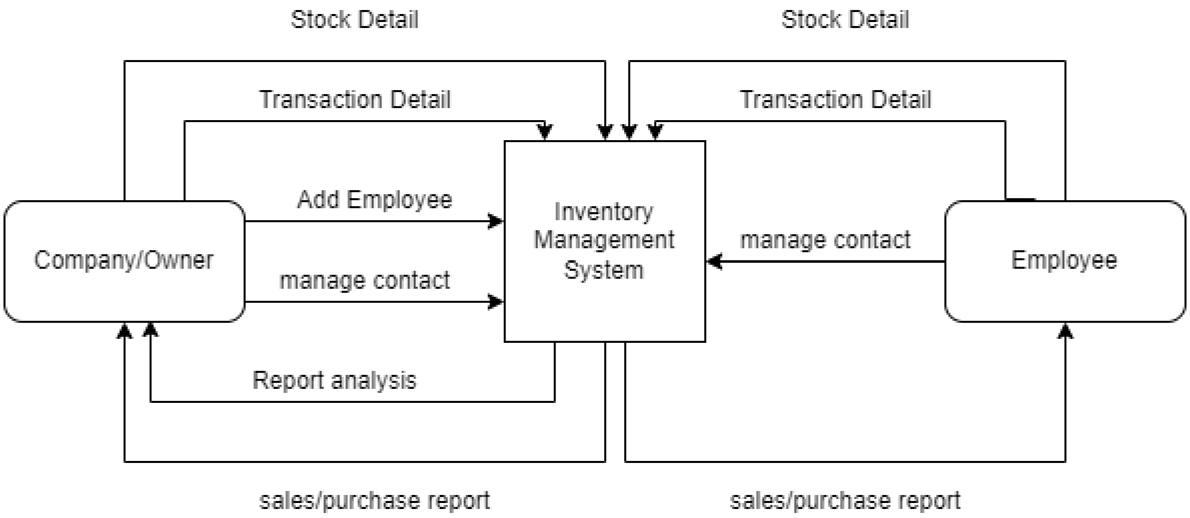
## 6. Activity Diagram



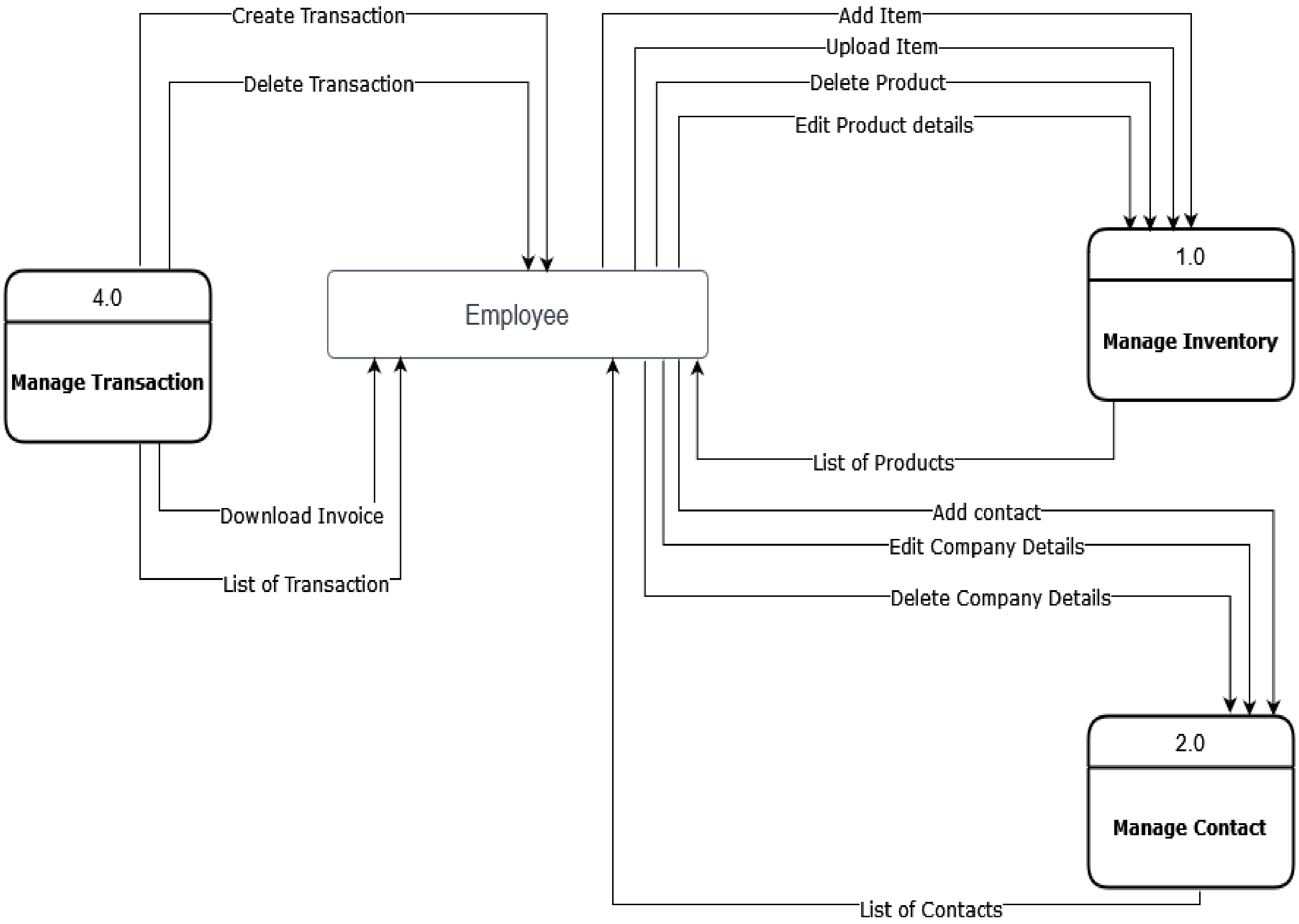
s

## 7. Data Flow Diagram

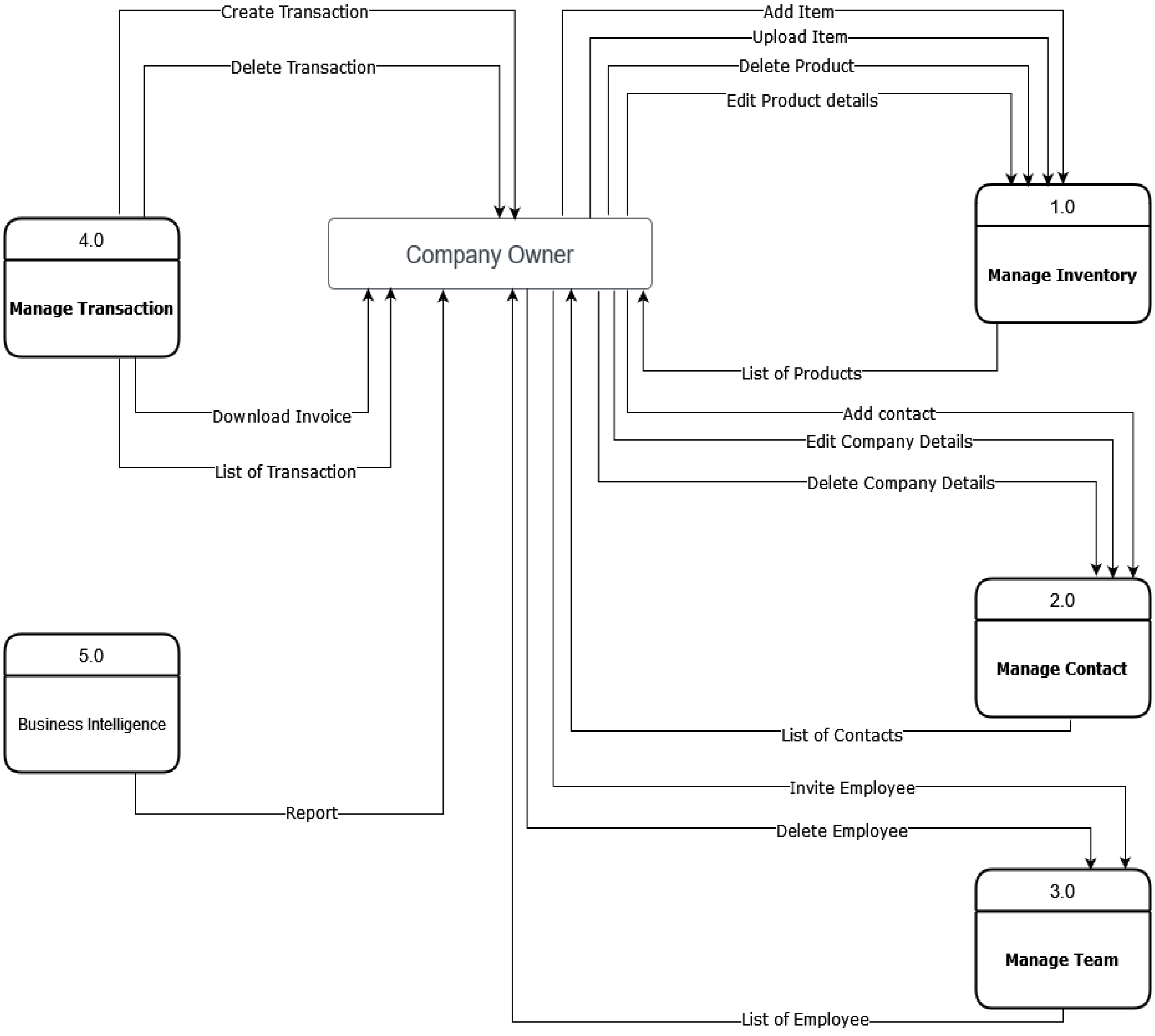
### Level - 0



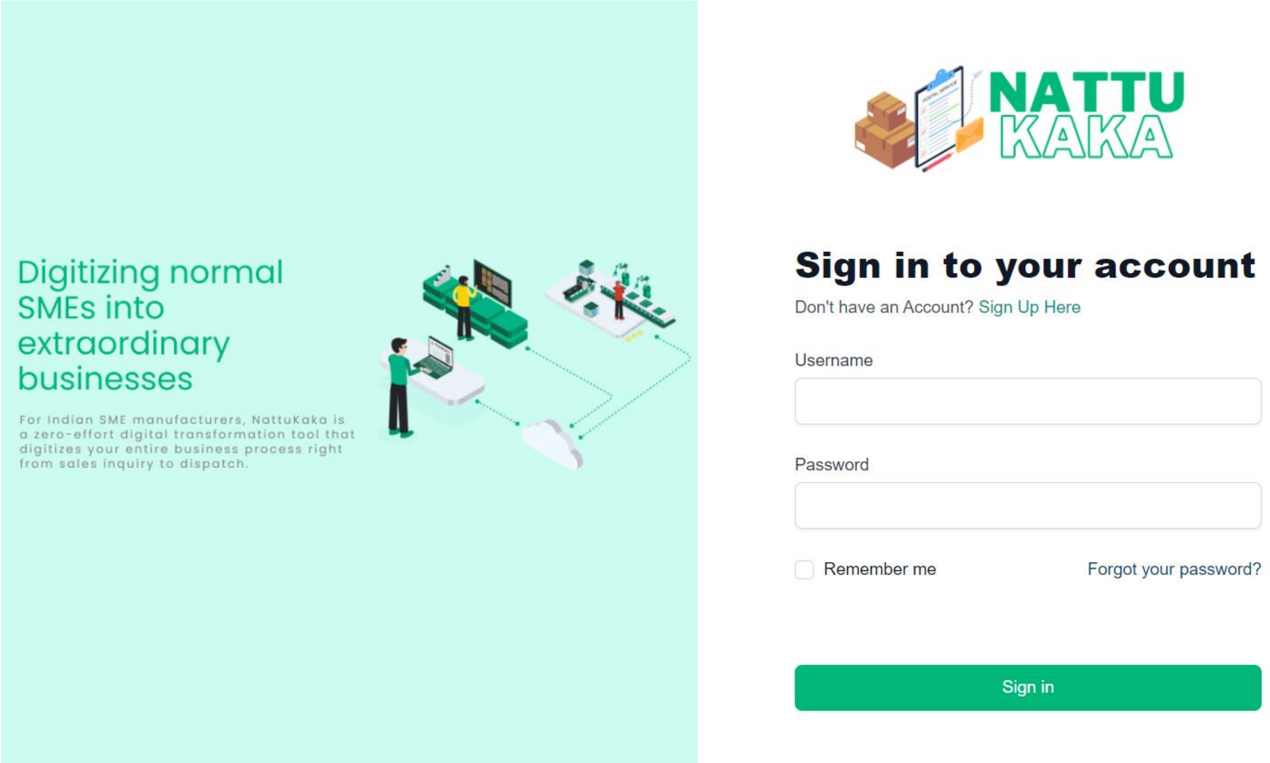
### Level - 1(a)



## Level - 1(b)


Create Transaction
Delete Transaction
Add Item
Upload Item
Delete Product
Edit Product details
4.0
Manage Transaction
Company Owner
1.0
Manage Inventory
List of Products
Download Invoice
List of Transaction
Add contact
Edit Company Details
Delete Company Details
2.0
Manage Contact
5.0
Business Intelligence
List of Contacts
Invite Employee
Report
Delete Employee
3.0
Manage Team
List of Employee

## 8. Screenshots



Digitizing normal SMEs into extraordinary businesses

For Indian SME manufacturers, NattuKaka is a zero-effort digital transformation tool that digitizes your entire business process right from sales inquiry to dispatch.

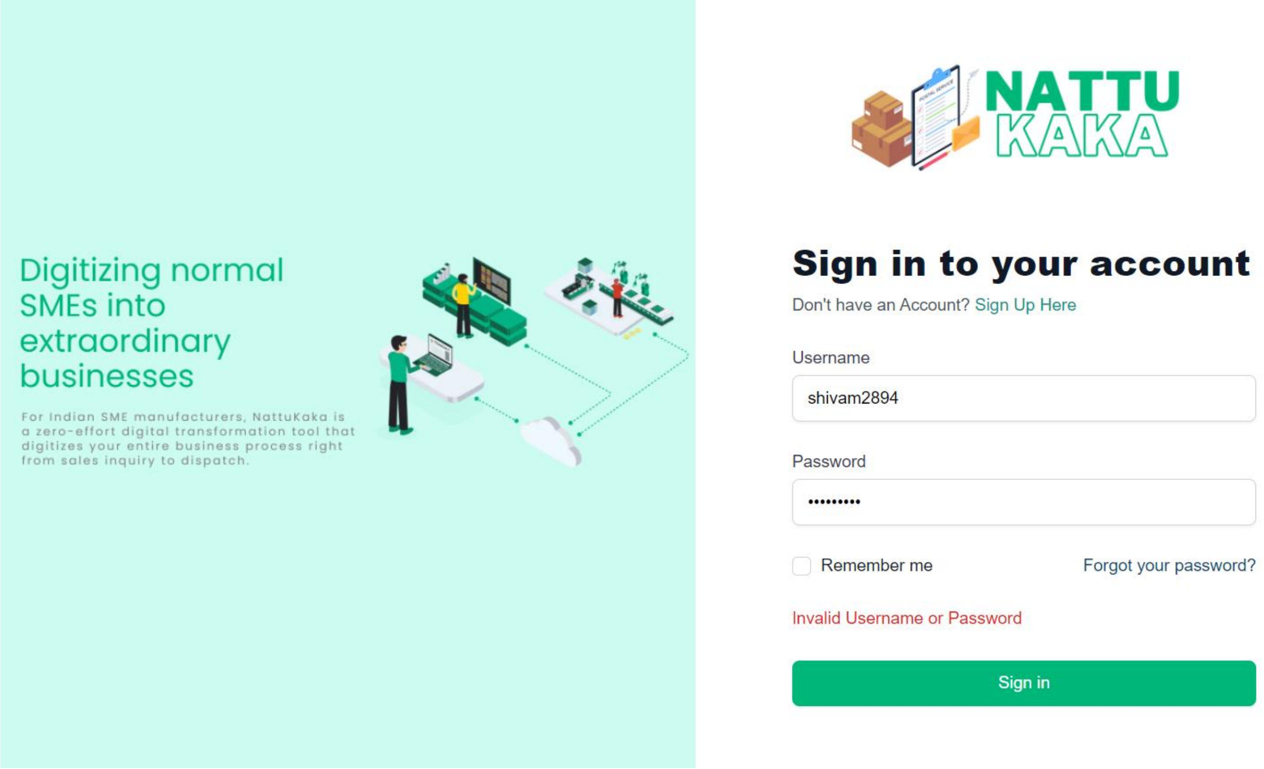
### Sign in to your account

Don't have an Account? Sign Up Here

Username

Password

□ Remember me Forgot your password?



Digitizing normal SMEs into extraordinary businesses

For Indian SME manufacturers, NattuKaka is a zero-effort digital transformation tool that digitizes your entire business process right from sales inquiry to dispatch.

### Sign in to your account

Don't have an Account? Sign Up Here

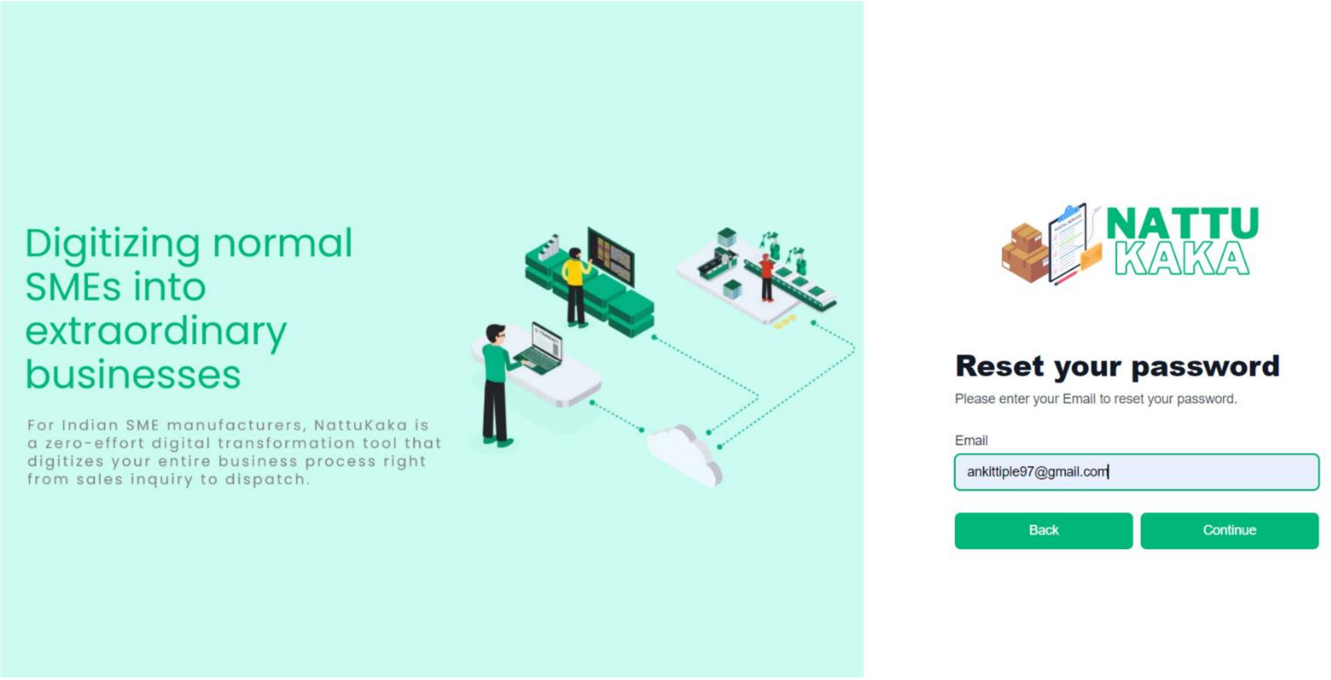
Username
shivam2894

Password
•••••••••

□ Remember me Forgot your password?

Invalid Username or Password

**Fig -Sign in Page**



Digitizing normal SMEs into extraordinary businesses

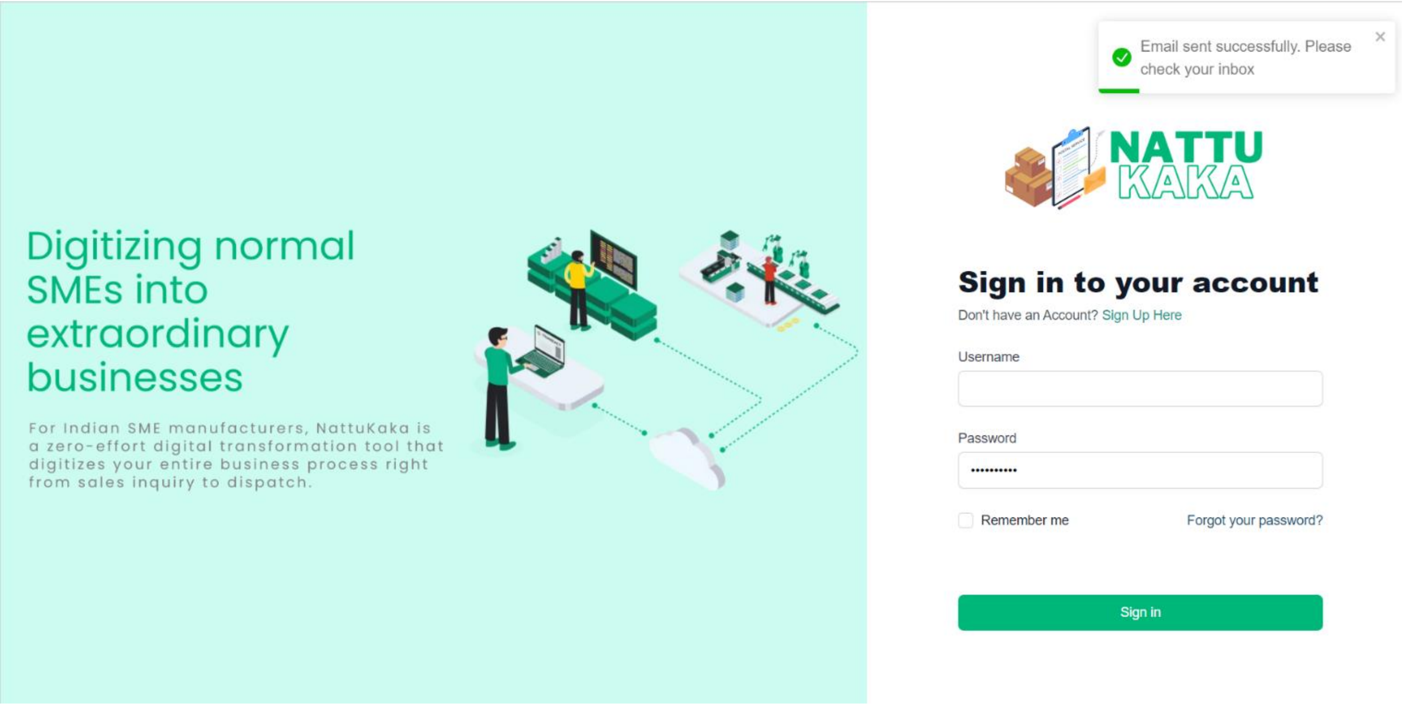
For Indian SME manufacturers, NattuKaka is a zero-effort digital transformation tool that digitizes your entire business process right from sales inquiry to dispatch.

NATTU KAKA

Reset your password

Please enter your Email to reset your password.

Email: ankittiple97@gmail.com



Email sent successfully. Please check your inbox

Digitizing normal SMEs into extraordinary businesses

For Indian SME manufacturers, NattuKaka is a zero-effort digital transformation tool that digitizes your entire business process right from sales inquiry to dispatch.

NATTU KAKA

Sign in to your account

Don't have an Account? Sign Up Here

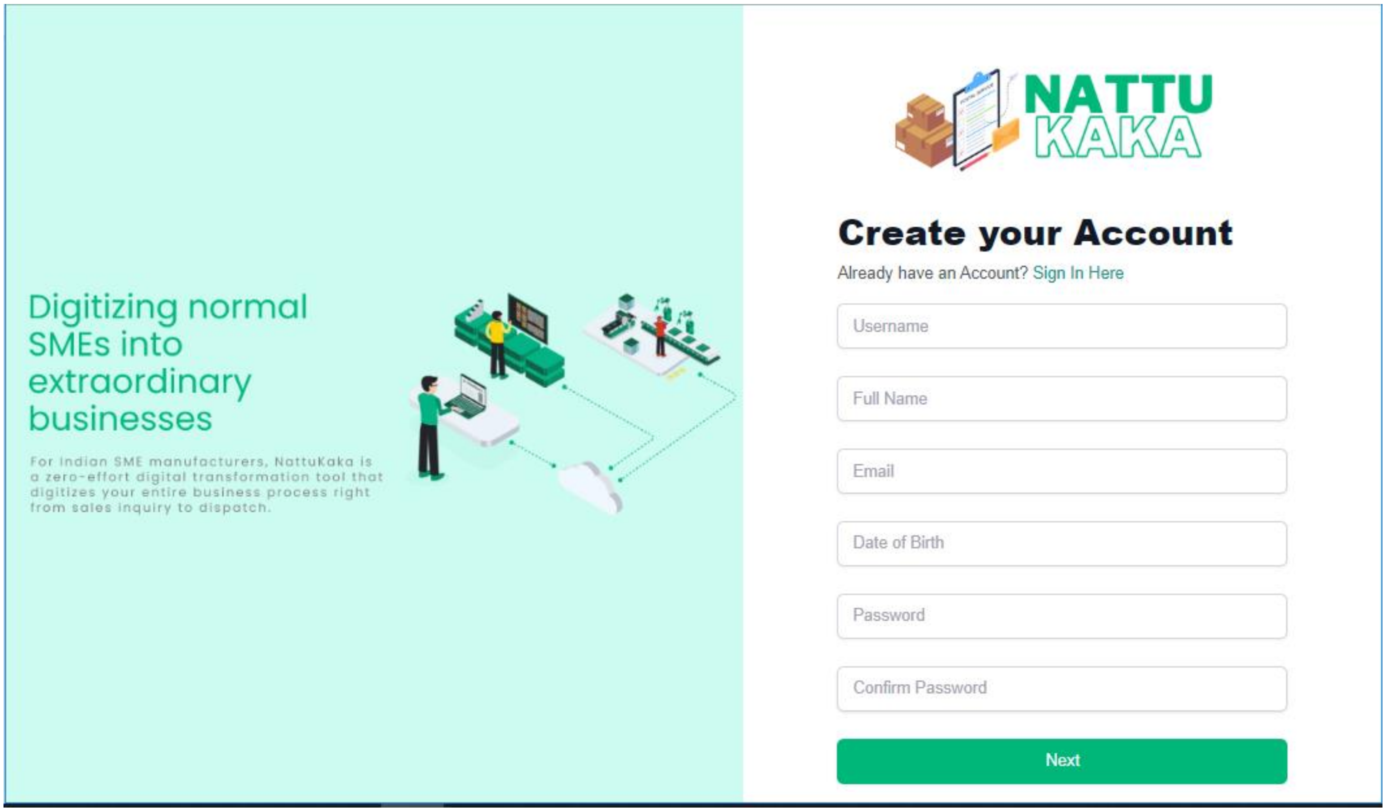
Username:

Password: ••••••••••

□ Remember me

Forgot your password?

**Fig. Reset Password Page**

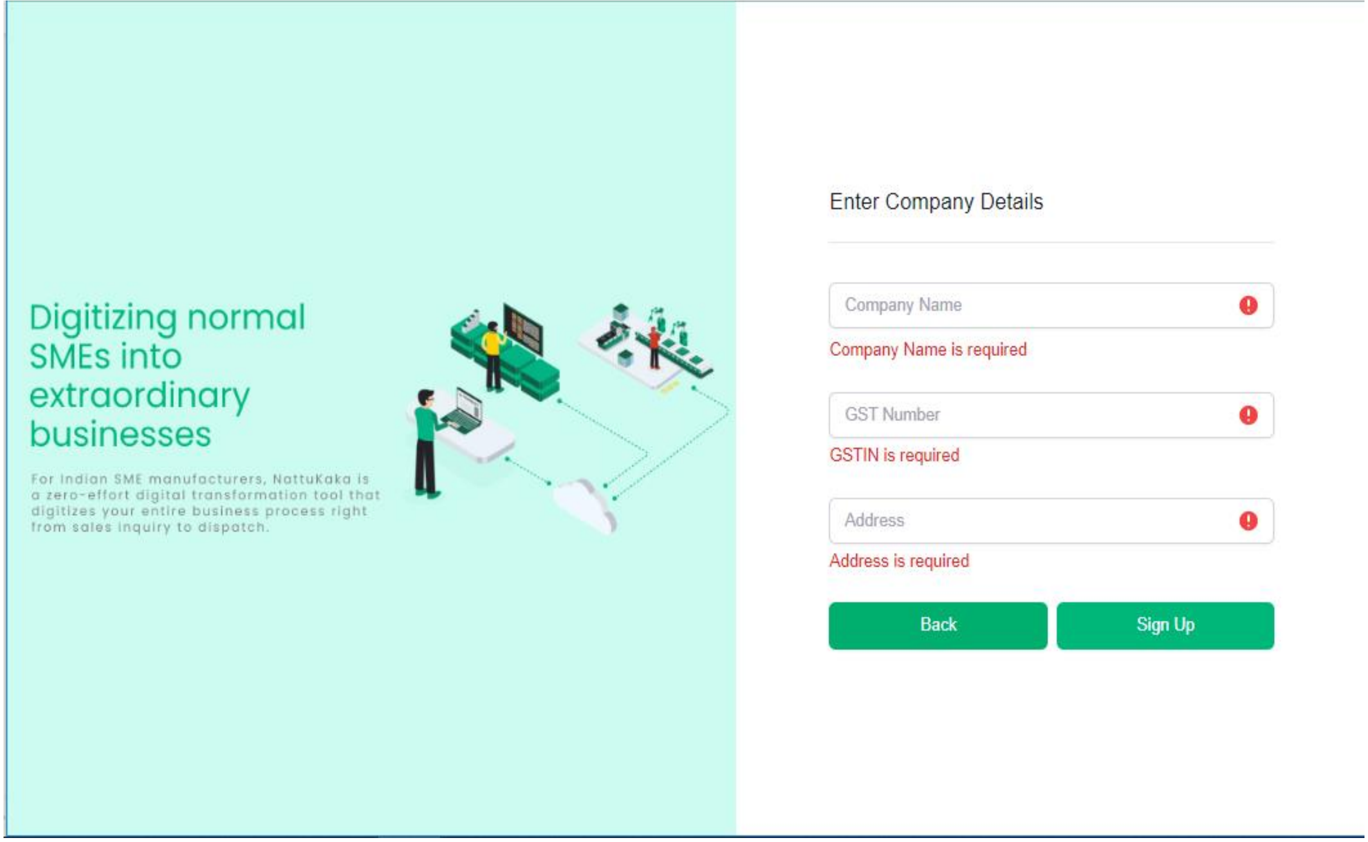


Digitizing normal SMEs into extraordinary businesses

For Indian SME manufacturers, NattuKaka is a zero-effort digital transformation tool that digitizes your entire business process right from sales inquiry to dispatch.

Create your Account

Already have an Account? Sign In Here



Digitizing normal SMEs into extraordinary businesses

For Indian SME manufacturers, NattuKaka is a zero-effort digital transformation tool that digitizes your entire business process right from sales inquiry to dispatch.

Enter Company Details

Company Name

Company Name is required

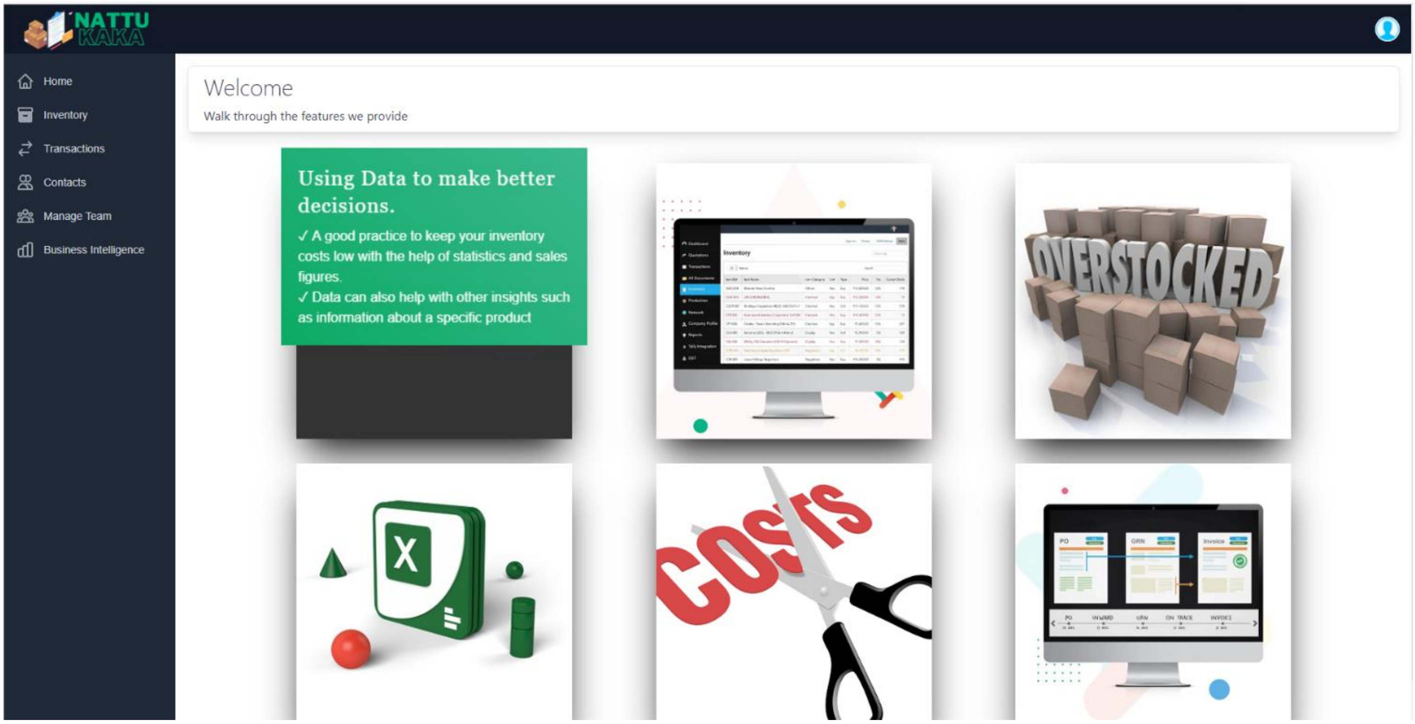
GST Number

GSTIN is required

Address

Address is required

**Fig- Create user**



Welcome

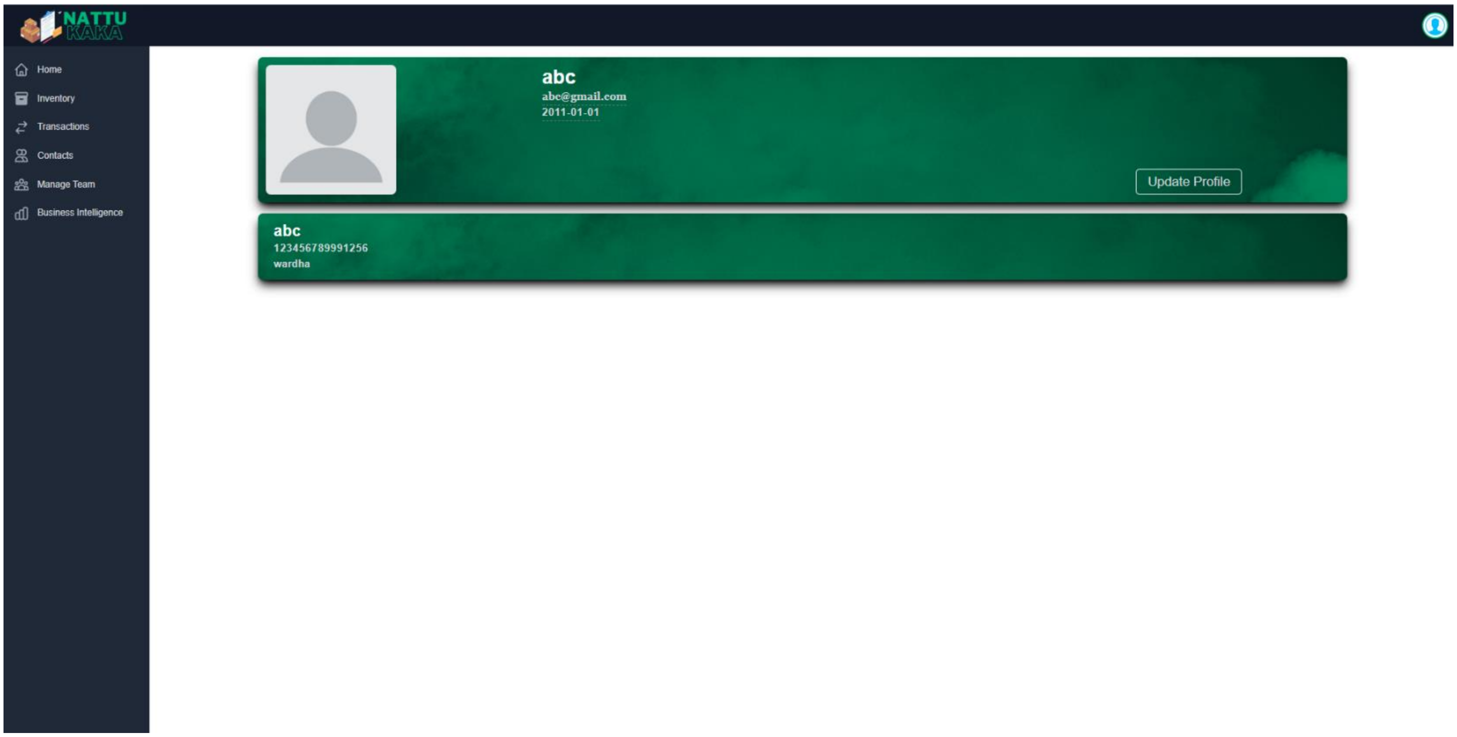
Walk through the features we provide

Using Data to make better decisions.

✓ A good practice to keep your inventory costs low with the help of statistics and sales figures.

✓ Data can also help with other insights such as information about a specific product

**Fig - Home Page**



abc

abc@gmail.com

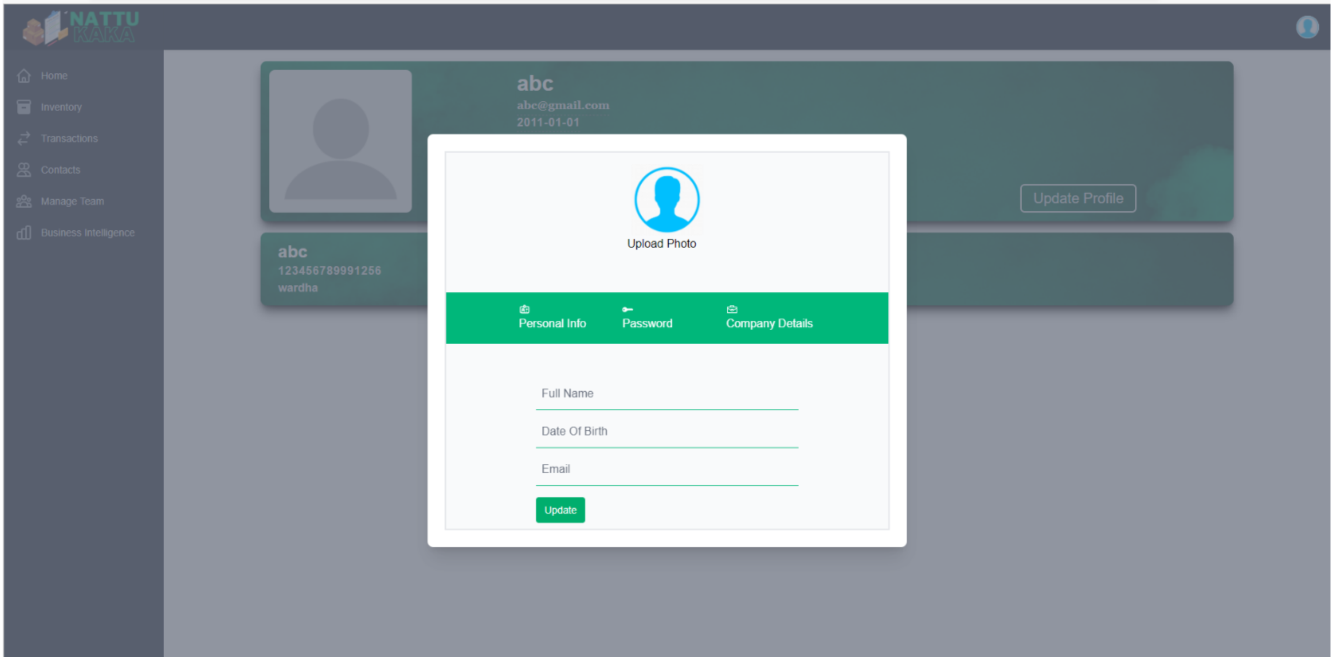
2011-01-01

abc

123456789991256

wardha

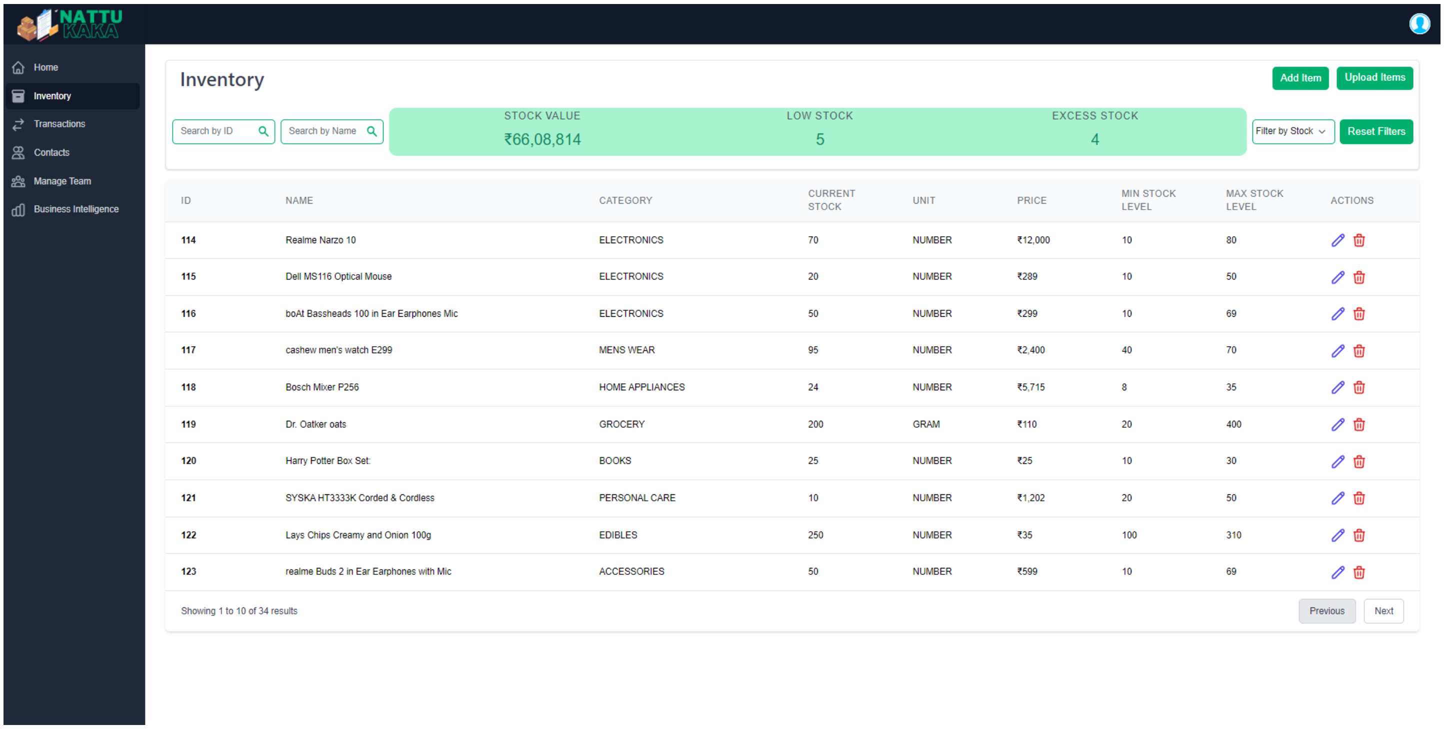
**Fig - Profile page**



abc
abc@gmail.com
2011-01-01

abc
123456789991266
wardha

**Fig - Update Profile**



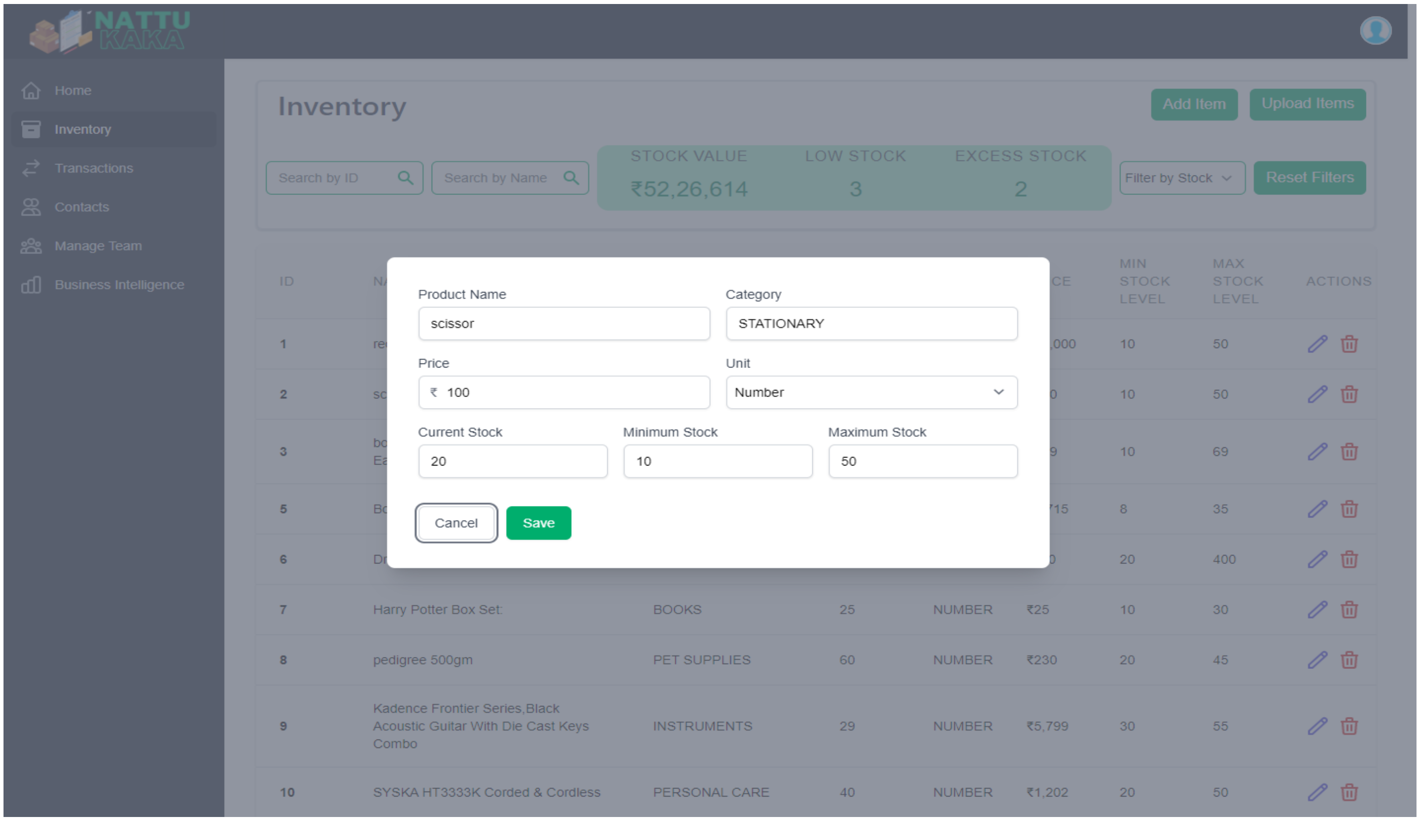
Inventory

STOCK VALUE ₹66,08,814
LOW STOCK 5
EXCESS STOCK 4

| ID | NAME | CATEGORY | CURRENT STOCK | UNIT | PRICE | MIN STOCK LEVEL | MAX STOCK LEVEL | ACTIONS |
|---|---|---|---|---|---|---|---|---|
| 114 | Realme Narzo 10 | ELECTRONICS | 70 | NUMBER | ₹12,000 | 10 | 80 | ✎ 🗑 |
| 115 | Dell MS116 Optical Mouse | ELECTRONICS | 20 | NUMBER | ₹289 | 10 | 50 | ✎ 🗑 |
| 116 | boAt Bassheads 100 in Ear Earphones Mic | ELECTRONICS | 50 | NUMBER | ₹299 | 10 | 69 | ✎ 🗑 |
| 117 | cashew men's watch E299 | MENS WEAR | 95 | NUMBER | ₹2,400 | 40 | 70 | ✎ 🗑 |
| 118 | Bosch Mixer P256 | HOME APPLIANCES | 24 | NUMBER | ₹5,715 | 8 | 35 | ✎ 🗑 |
| 119 | Dr. Oatker oats | GROCERY | 200 | GRAM | ₹110 | 20 | 400 | ✎ 🗑 |
| 120 | Harry Potter Box Set: | BOOKS | 25 | NUMBER | ₹25 | 10 | 30 | ✎ 🗑 |
| 121 | SYSKA HT3333K Corded & Cordless | PERSONAL CARE | 10 | NUMBER | ₹1,202 | 20 | 50 | ✎ 🗑 |
| 122 | Lays Chips Creamy and Onion 100g | EDIBLES | 250 | NUMBER | ₹35 | 100 | 310 | ✎ 🗑 |
| 123 | realme Buds 2 in Ear Earphones with Mic | ACCESSORIES | 50 | NUMBER | ₹599 | 10 | 69 | ✎ 🗑 |

Showing 1 to 10 of 34 results

**Fig - Inventory Page**



Inventory

STOCK VALUE ₹52,26,614 | LOW STOCK 3 | EXCESS STOCK 2

Product Name: scissor

Category: STATIONARY

Price: ₹ 100

Unit: Number

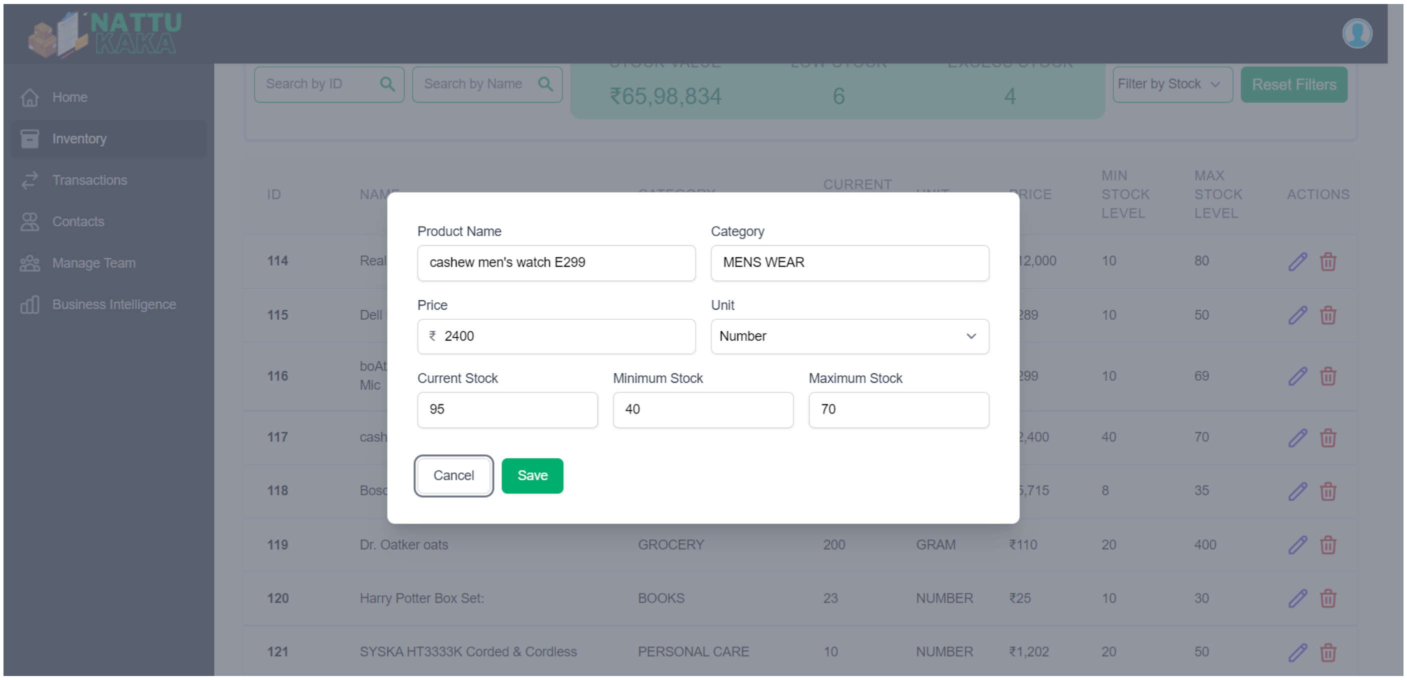
Current Stock: 20

Minimum Stock: 10

Maximum Stock: 50

| ID | NA | | | | CE | MIN STOCK LEVEL | MAX STOCK LEVEL | ACTIONS |
|---|---|---|---|---|---|---|---|---|
| 1 | re | | | | ,000 | 10 | 50 | |
| 2 | sc | | | | 0 | 10 | 50 | |
| 3 | bo<br>Ea | | | | 9 | 10 | 69 | |
| 5 | Bo | | | | 715 | 8 | 35 | |
| 6 | Dr | | | | 0 | 20 | 400 | |
| 7 | Harry Potter Box Set: | BOOKS | 25 | NUMBER | ₹25 | 10 | 30 | |
| 8 | pedigree 500gm | PET SUPPLIES | 60 | NUMBER | ₹230 | 20 | 45 | |
| 9 | Kadence Frontier Series,Black Acoustic Guitar With Die Cast Keys Combo | INSTRUMENTS | 29 | NUMBER | ₹5,799 | 30 | 55 | |
| 10 | SYSKA HT3333K Corded & Cordless | PERSONAL CARE | 40 | NUMBER | ₹1,202 | 20 | 50 | |

**Fig - Add New Product**



₹65,98,834 | 6 | 4

Product Name: cashew men's watch E299

Category: MENS WEAR

Price: ₹ 2400

Unit: Number

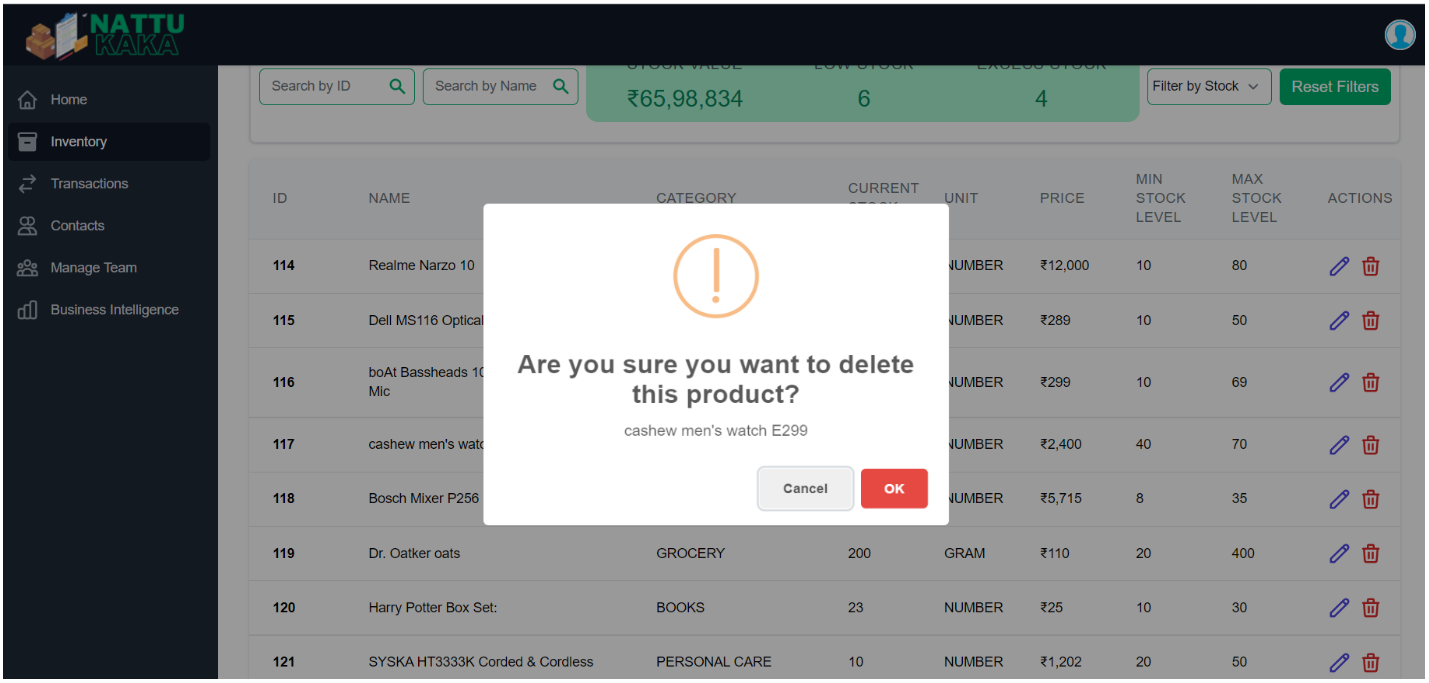
Current Stock: 95

Minimum Stock: 40

Maximum Stock: 70

| ID | NAME | | CURRENT | | PRICE | MIN STOCK LEVEL | MAX STOCK LEVEL | ACTIONS |
|---|---|---|---|---|---|---|---|---|
| 114 | Real | | | | 12,000 | 10 | 80 | |
| 115 | Dell | | | | 289 | 10 | 50 | |
| 116 | boAt<br>Mic | | | | 299 | 10 | 69 | |
| 117 | cash | | | | 2,400 | 40 | 70 | |
| 118 | Bosc | | | | 5,715 | 8 | 35 | |
| 119 | Dr. Oatker oats | GROCERY | 200 | GRAM | ₹110 | 20 | 400 | |
| 120 | Harry Potter Box Set: | BOOKS | 23 | NUMBER | ₹25 | 10 | 30 | |
| 121 | SYSKA HT3333K Corded & Cordless | PERSONAL CARE | 10 | NUMBER | ₹1,202 | 20 | 50 | |

**Fig- Edit Product Details**



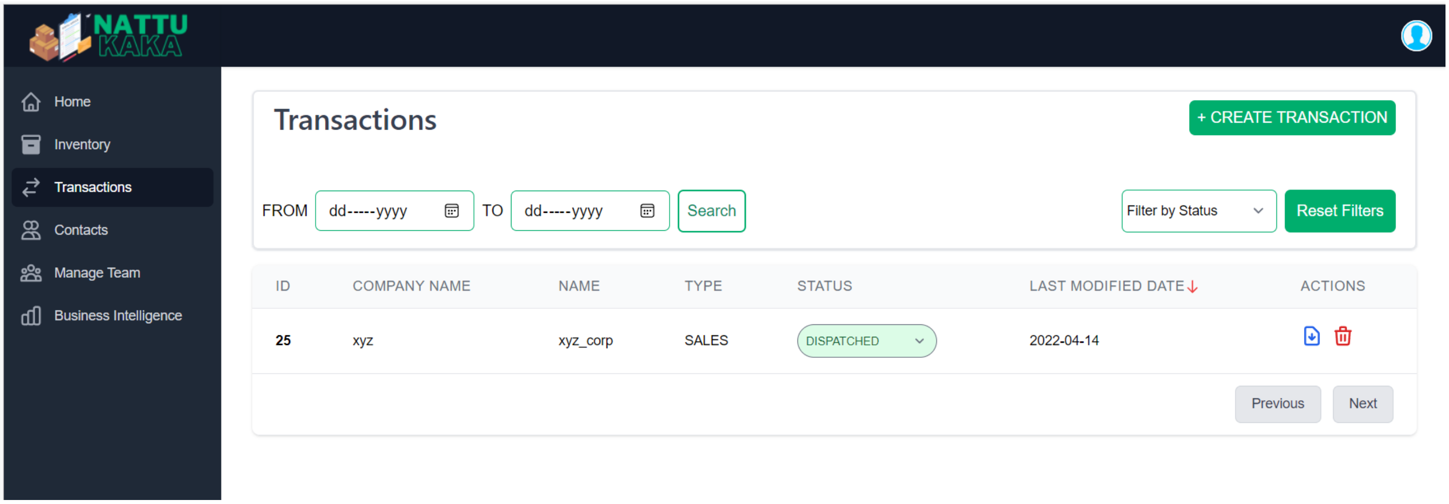
| STOCK VALUE | LOW STOCK | EXCESS STOCK |
|---|---|---|
| ₹65,98,834 | 6 | 4 |

| ID | NAME | CATEGORY | CURRENT STOCK | UNIT | PRICE | MIN STOCK LEVEL | MAX STOCK LEVEL | ACTIONS |
|---|---|---|---|---|---|---|---|---|
| 114 | Realme Narzo 10 | | | NUMBER | ₹12,000 | 10 | 80 | |
| 115 | Dell MS116 Optical | | | NUMBER | ₹289 | 10 | 50 | |
| 116 | boAt Bassheads 10 Mic | | | NUMBER | ₹299 | 10 | 69 | |
| 117 | cashew men's watc | | | NUMBER | ₹2,400 | 40 | 70 | |
| 118 | Bosch Mixer P256 | | | NUMBER | ₹5,715 | 8 | 35 | |
| 119 | Dr. Oatker oats | GROCERY | 200 | GRAM | ₹110 | 20 | 400 | |
| 120 | Harry Potter Box Set: | BOOKS | 23 | NUMBER | ₹25 | 10 | 30 | |
| 121 | SYSKA HT3333K Corded & Cordless | PERSONAL CARE | 10 | NUMBER | ₹1,202 | 20 | 50 | |

Are you sure you want to delete this product?

cashew men's watch E299

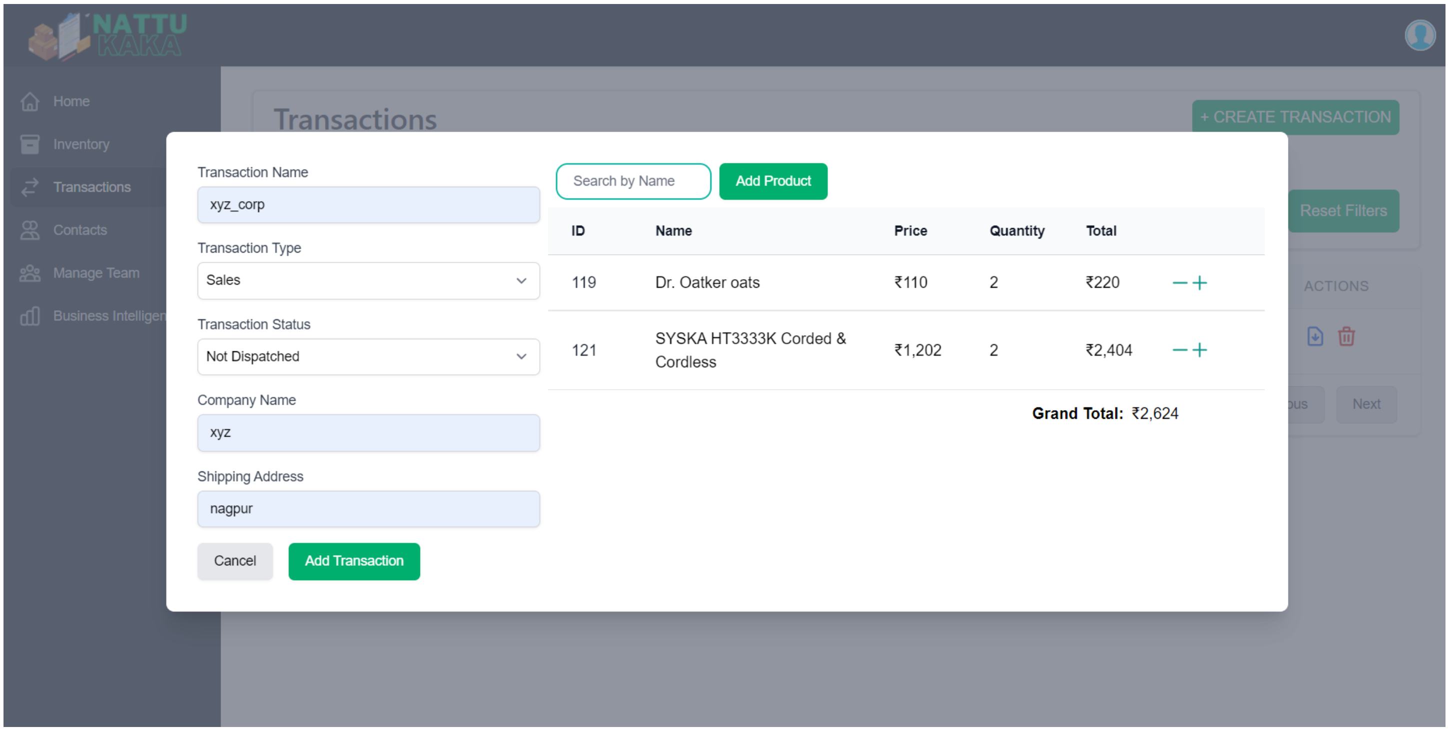
**Fig- Delete Product**



Transactions

| ID | COMPANY NAME | NAME | TYPE | STATUS | LAST MODIFIED DATE↓ | ACTIONS |
|---|---|---|---|---|---|---|
| 25 | xyz | xyz_corp | SALES | DISPATCHED | 2022-04-14 | |

**Fig - Transactions Page**



Transaction Name: xyz_corp

Transaction Type: Sales

Transaction Status: Not Dispatched

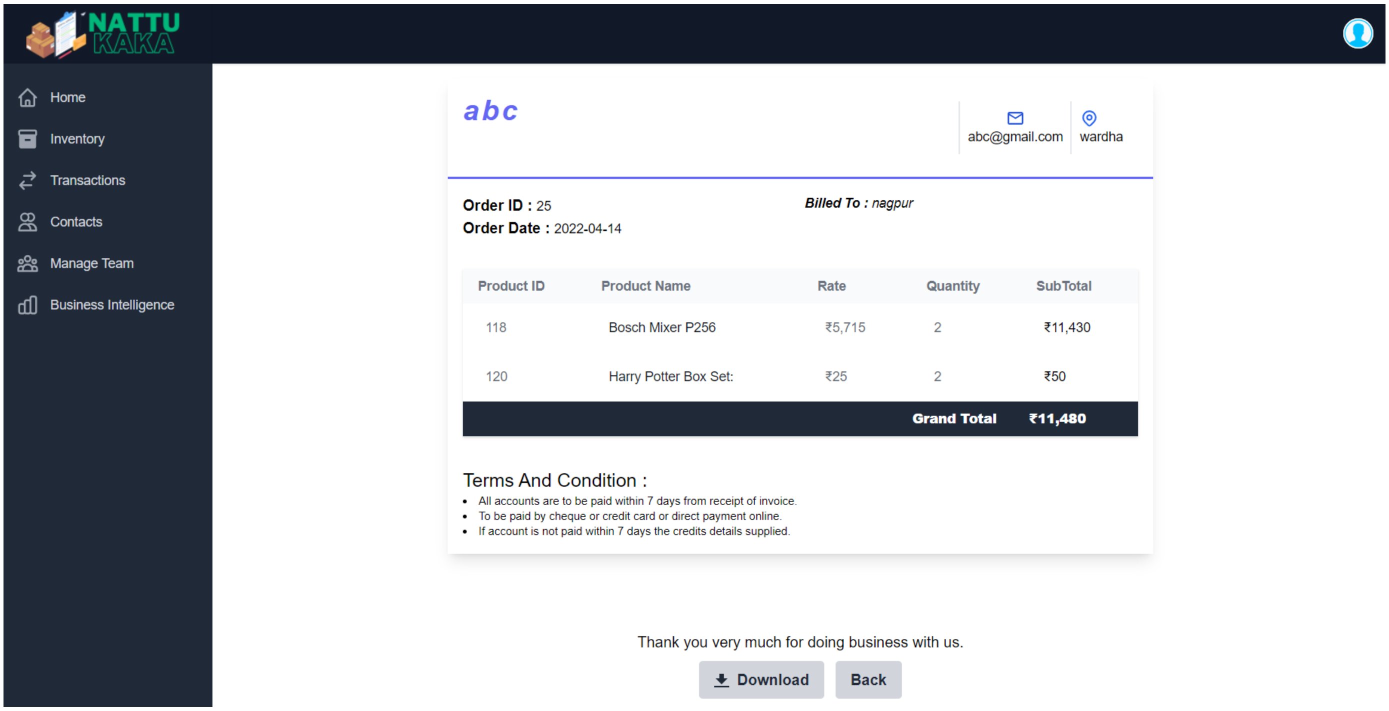
Company Name: xyz

Shipping Address: nagpur

| ID | Name | Price | Quantity | Total |
|---|---|---|---|---|
| 119 | Dr. Oatker oats | ₹110 | 2 | ₹220 |
| 121 | SYSKA HT3333K Corded & Cordless | ₹1,202 | 2 | ₹2,404 |

**Grand Total:** ₹2,624

**Fig - Create New Transaction**



abc

abc@gmail.com wardha

**Order ID :** 25

**Order Date :** 2022-04-14

***Billed To :*** *nagpur*

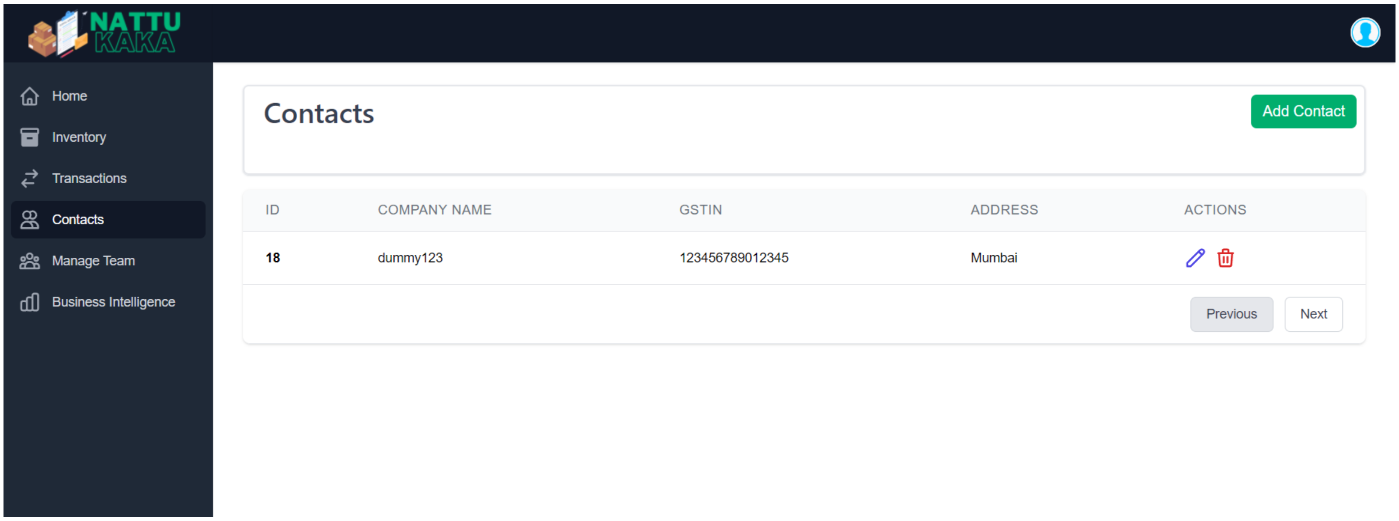
| Product ID | Product Name | Rate | Quantity | SubTotal |
|---|---|---|---|---|
| 118 | Bosch Mixer P256 | ₹5,715 | 2 | ₹11,430 |
| 120 | Harry Potter Box Set: | ₹25 | 2 | ₹50 |
| | | | **Grand Total** | **₹11,480** |

Terms And Condition :

- All accounts are to be paid within 7 days from receipt of invoice.
- To be paid by cheque or credit card or direct payment online.
- If account is not paid within 7 days the credits details supplied.

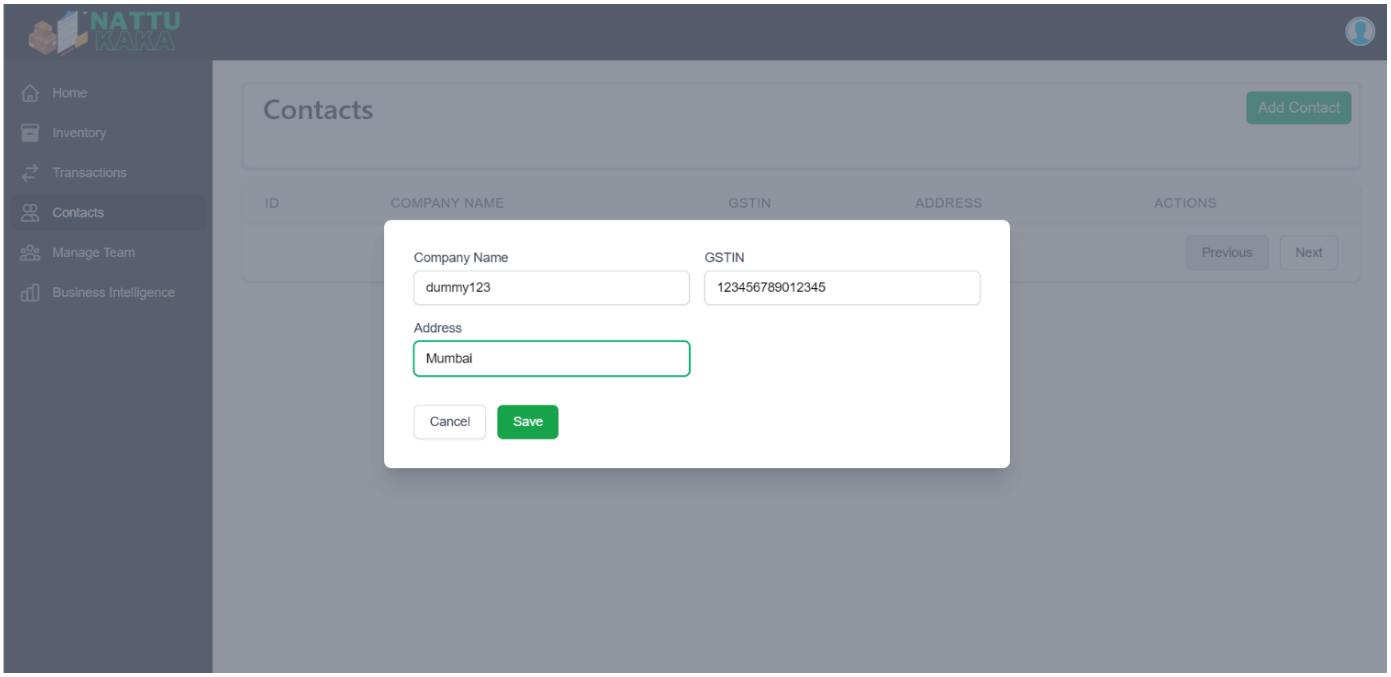
Thank you very much for doing business with us.

**Fig - Download Invoice**



| ID | COMPANY NAME | GSTIN | ADDRESS | ACTIONS |
|---|---|---|---|---|
| 18 | dummy123 | 123456789012345 | Mumbai | |

**Fig - Contacts Page**

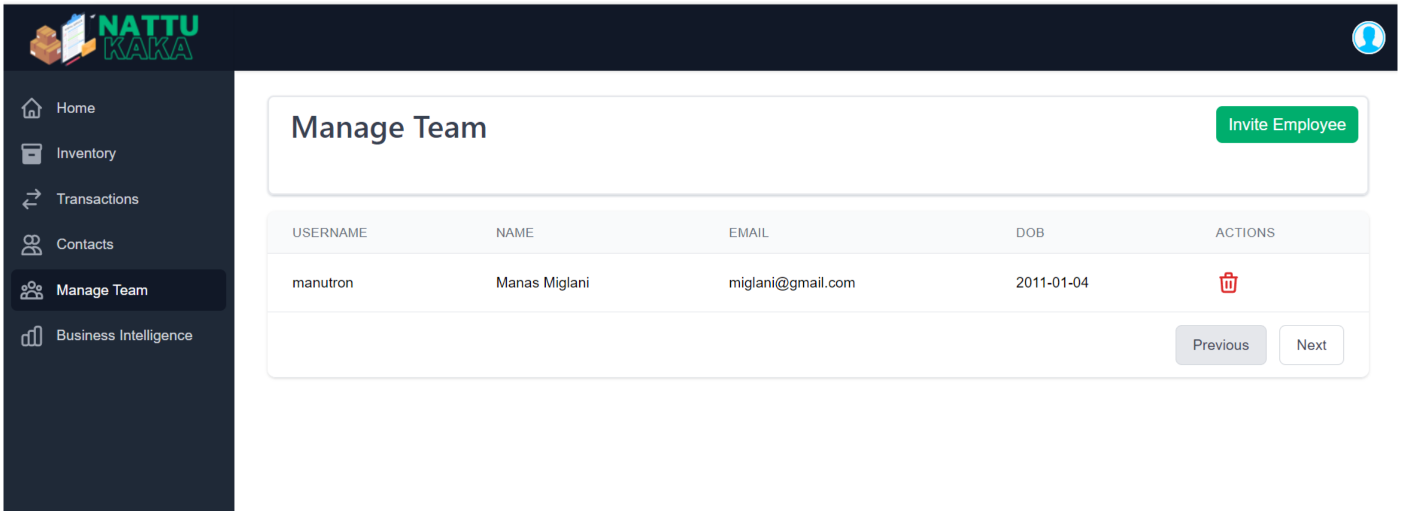


Company Name: dummy123

GSTIN: 123456789012345

Address: Mumbai

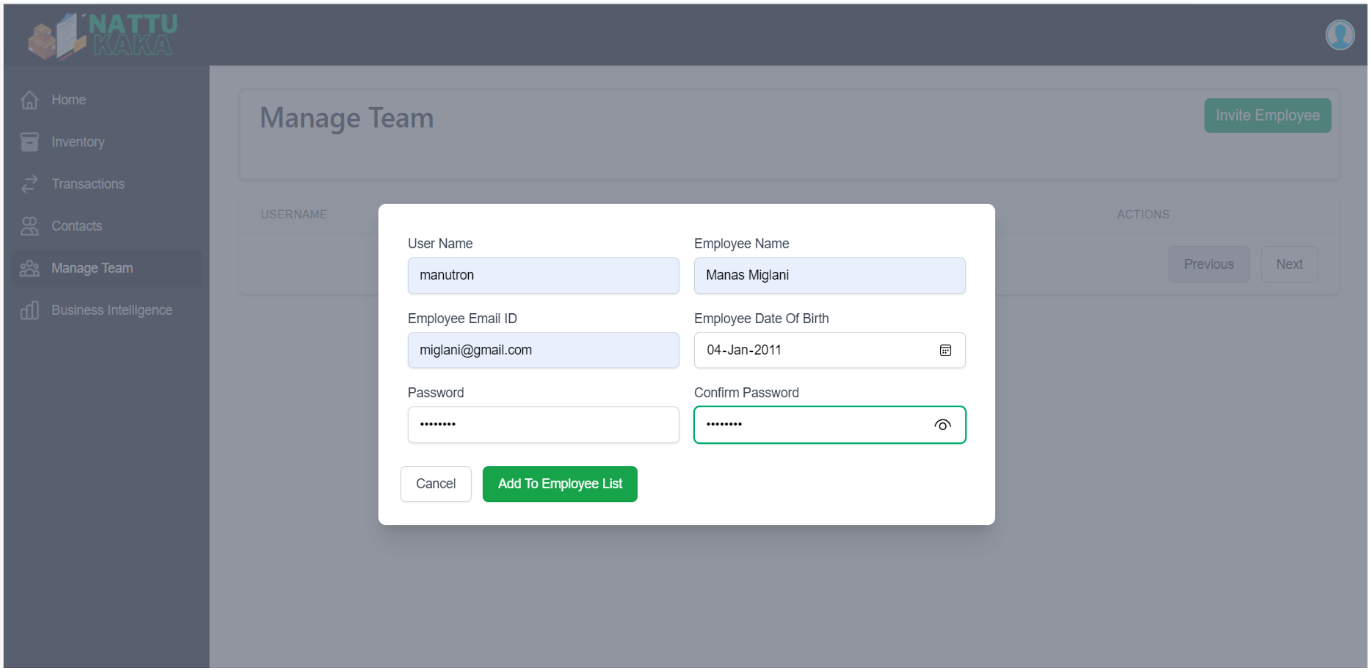
**Fig - Add Contact**



Manage Team

| USERNAME | NAME | EMAIL | DOB | ACTIONS |
|---|---|---|---|---|
| manutron | Manas Miglani | miglani@gmail.com | 2011-01-04 | 🗑 |

**Fig - Manage Team page**



User Name: manutron

Employee Name: Manas Miglani

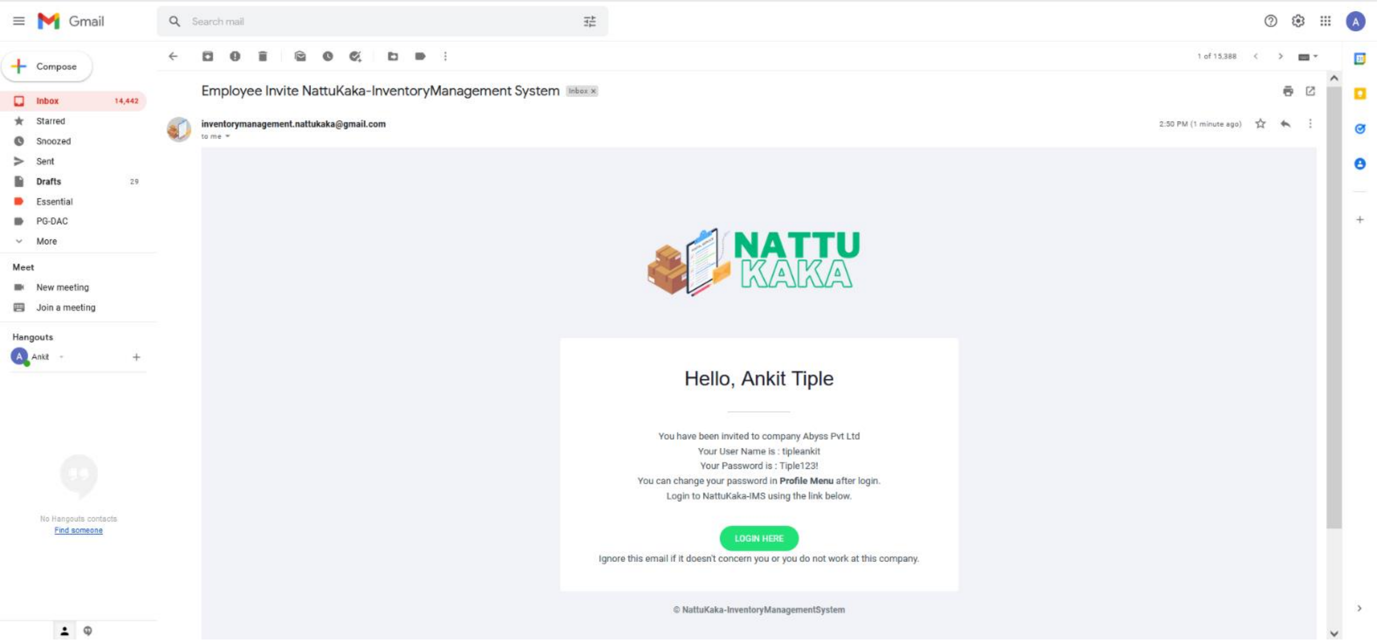
Employee Email ID: miglani@gmail.com

Employee Date Of Birth: 04-Jan-2011

Password: ••••••••

Confirm Password: ••••••••

**Fig – Invite Employee**



Employee Invite NattuKaka-InventoryManagement System

inventorymanagement.nattukaka@gmail.com
to me

2:50 PM (1 minute ago)

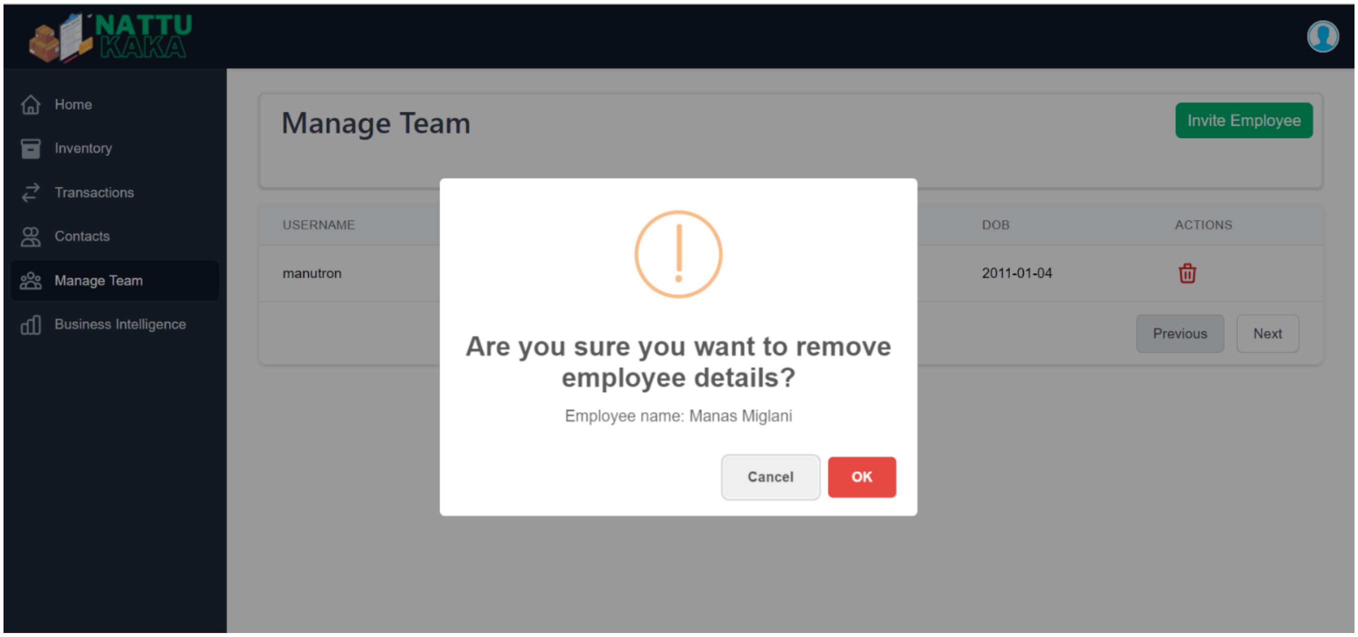
Hello, Ankit Tiple

You have been invited to company Abyss Pvt Ltd
Your User Name is : tipleankit
Your Password is : Tiple123!
You can change your password in **Profile Menu** after login.
Login to NattuKaka-IMS using the link below.

Ignore this email if it doesn't concern you or you do not work at this company.

© NattuKaka-InventoryManagementSystem

**Fig – Employee Invitation Mail**



Manage Team

| USERNAME | DOB | ACTIONS |
|---|---|---|
| manutron | 2011-01-04 | |

Are you sure you want to remove employee details?

Employee name: Manas Miglani

**Fig - Delete Employee Details**

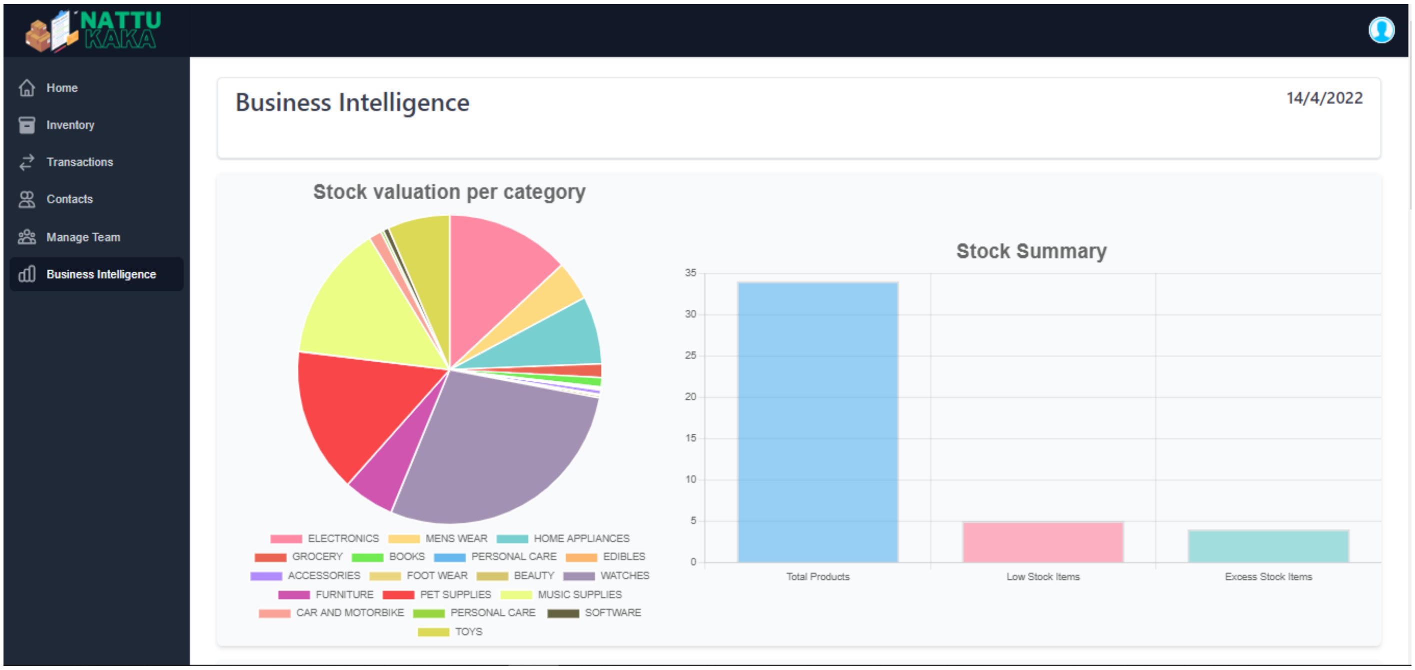


**Fig - Business Intelligence Page (Stock Evaluation Per Category)**

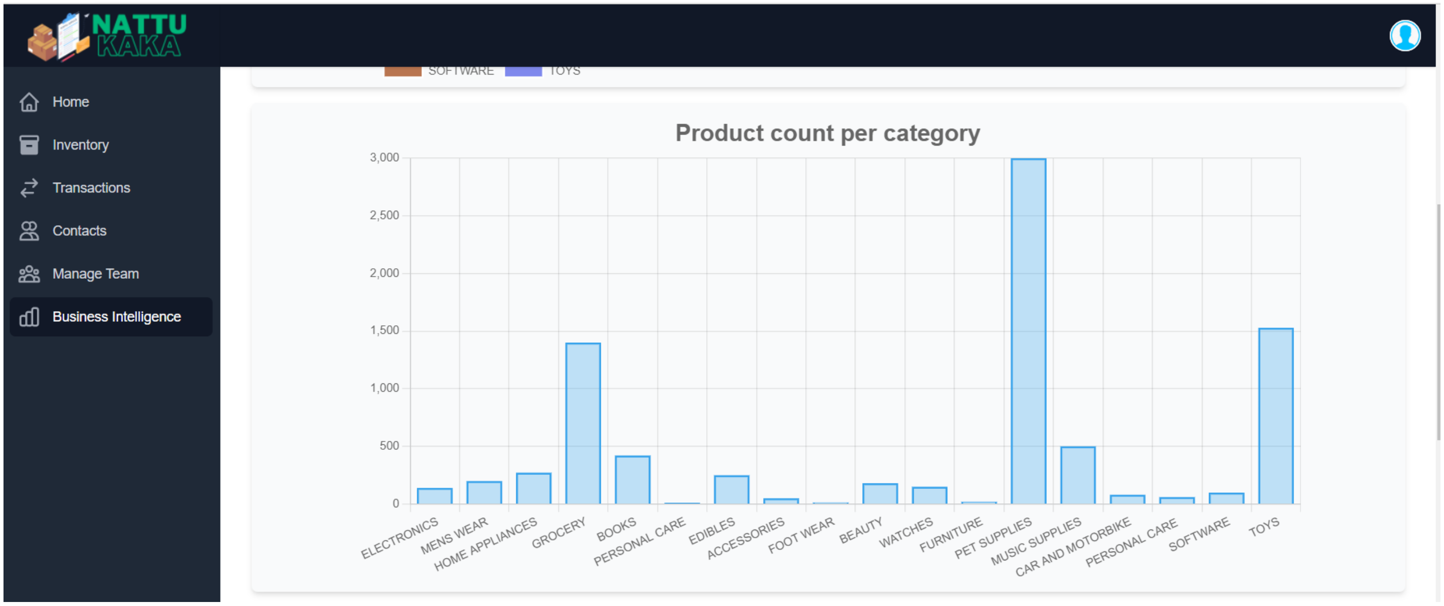
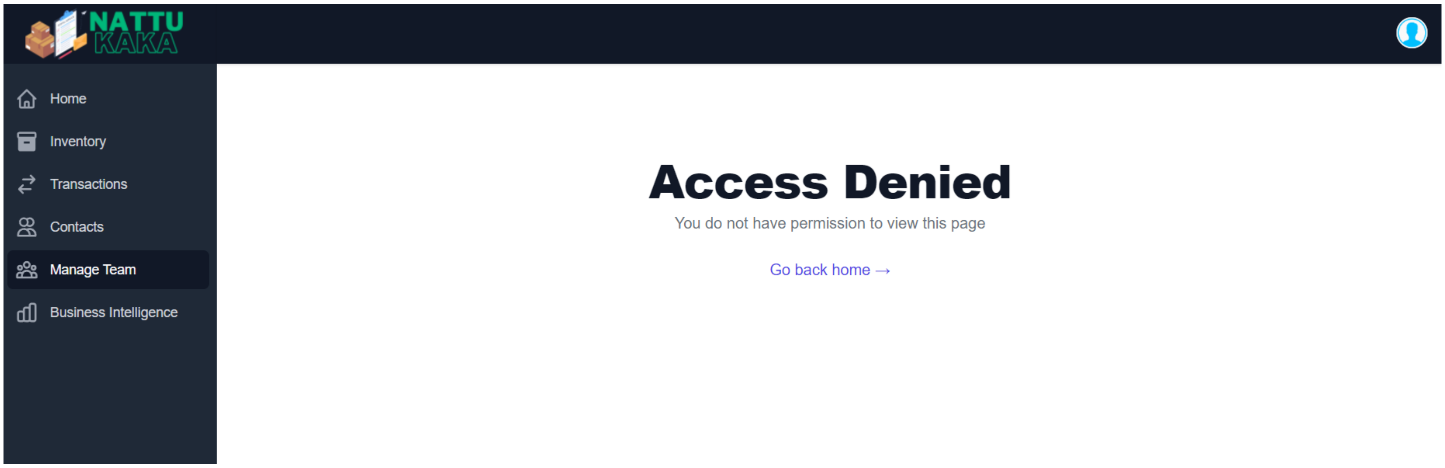


**Fig - Business Intelligence Page (Product Count Per Category)**

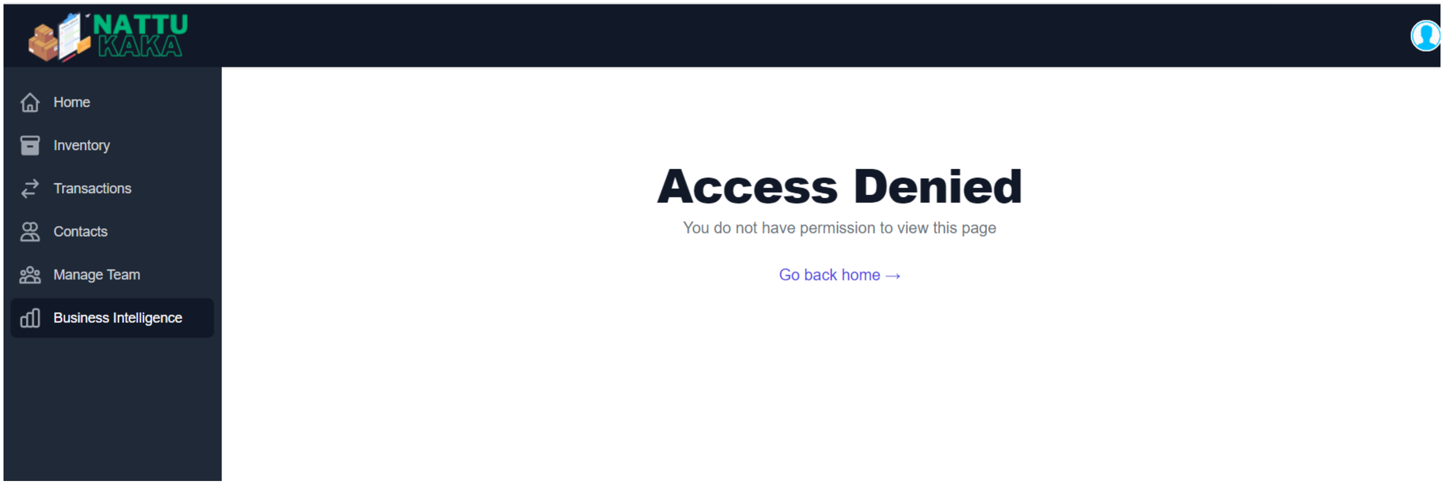


Access Denied

You do not have permission to view this page

Go back home →

**Fig – Employee cannot Access Manage Team Page**



Access Denied

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**Fig – Employee cannot Access Business Intelligence Page**

## 9. Test Cases

The report of the testing is given here under.

**Test Case**

| Test Case Id | PreCondition | Test Scenario / Test Condition | Test Case / Test Step | Test Data | Expected Result | Remarks |
|---|---|---|---|---|---|---|
| TD_01 | The program should be deployed on the server | Test if the valid input is given and if the details are validated, show login message | enter username | admin | *Login Successfull* | Pass |
| | | | *enter password* | adminadmin12! | | |
| | | | *re-enter password* | adminadmin | | |
| | | | click on submit button | | | |
| | | | | | | |
| TD_02 | The program should be deployed on the server | Test if the username is not entered | enter username | | *username cannot be empty* | Pass |
| | | | *enter password* | adminadmin12! | | |
| | | | | | | |
| | | | click on submit button | | | |
| | | | | | | |
| TD_03 | The program should be deployed on the server | Test if the password is not entered | enter username | admin | *password cannot be empty* | Pass |
| | | | *enter password* | | | |
| | | | | | | |
| | | | click on submit button | | | |
| | | | | | | |
| TD_04 | The program should be deployed on the server | Test if the re-entered password is not entered | enter username | admin | *Login Failed* | Pass |
| | | | *enter password* | xyzacv123@ | | |
| | | | | | | |
| | | | click on submit button | | | |
| | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| TD_05 | Logged in and on Inventory Page | Test search by product ID | product ID | 81 | Product Found and displayed | Pass |
| | | | | | | |
| | | | | | | |
| | | | click on search button | | | |
| | | | | | | |
| TD_06 | Logged in and on Inventory Page | Test search by product ID | product ID | 5 | *Error Message: Product with ID 5 not found* | Pass |
| | | | | | | |
| | | | | | | |
| | | | click on search button | | | |
| | | | | | | |
| TD_07 | Logged in and on Inventory Page | Test search by product name | Product Name | re | *List of all products which contain letters re* | Pass |
| | | | | | | |
| | | | | | | |
| | | | click on search button | | | |
| | | | | | | |
| TD_08 | Logged in and on Inventory Page | Test search by product name | Product Name | 45 | *Error Message: Product 45 not found* | Pass |
| | | | | | | |
| | | | | | | |
| | | | click on search button | | | |
| | | | | | | |
| TD_09 | Logged in and on Inventory Page | Test filter by stock | select Low Stock from dropdown menu | | *List of all products which have low stock* | Pass |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| TD_10 | Logged in and on Inventory Page | Test filter by stock | select Low Stock from dropdown menu | | *List of all products which have low stock* | Pass |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

## 10. Future Scope

1. We can add functionality of inventory forecasting based on AI.
2. Sending initial Login Credential to user on mail.
3. More customised role based access.
4. Mobile application could be developed to provide .
5. Multilingual support can be provided so that it can be understandable by the person of any language.

## 11. Conclusion

The efficiency of any system designed to suit an organization depends cooperation during the implementation stage and also flexibility of the system to adopt itself to the organization.

“Nattukaka” has been developed to overcome the problems with traditional stock management in large scale. Advantages over traditional manual systems are online application access through out inventory from the same location, reducing the manual work, storage the data at a secured centralized locations and quick generation of reports as per our requirements

## 12. References

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